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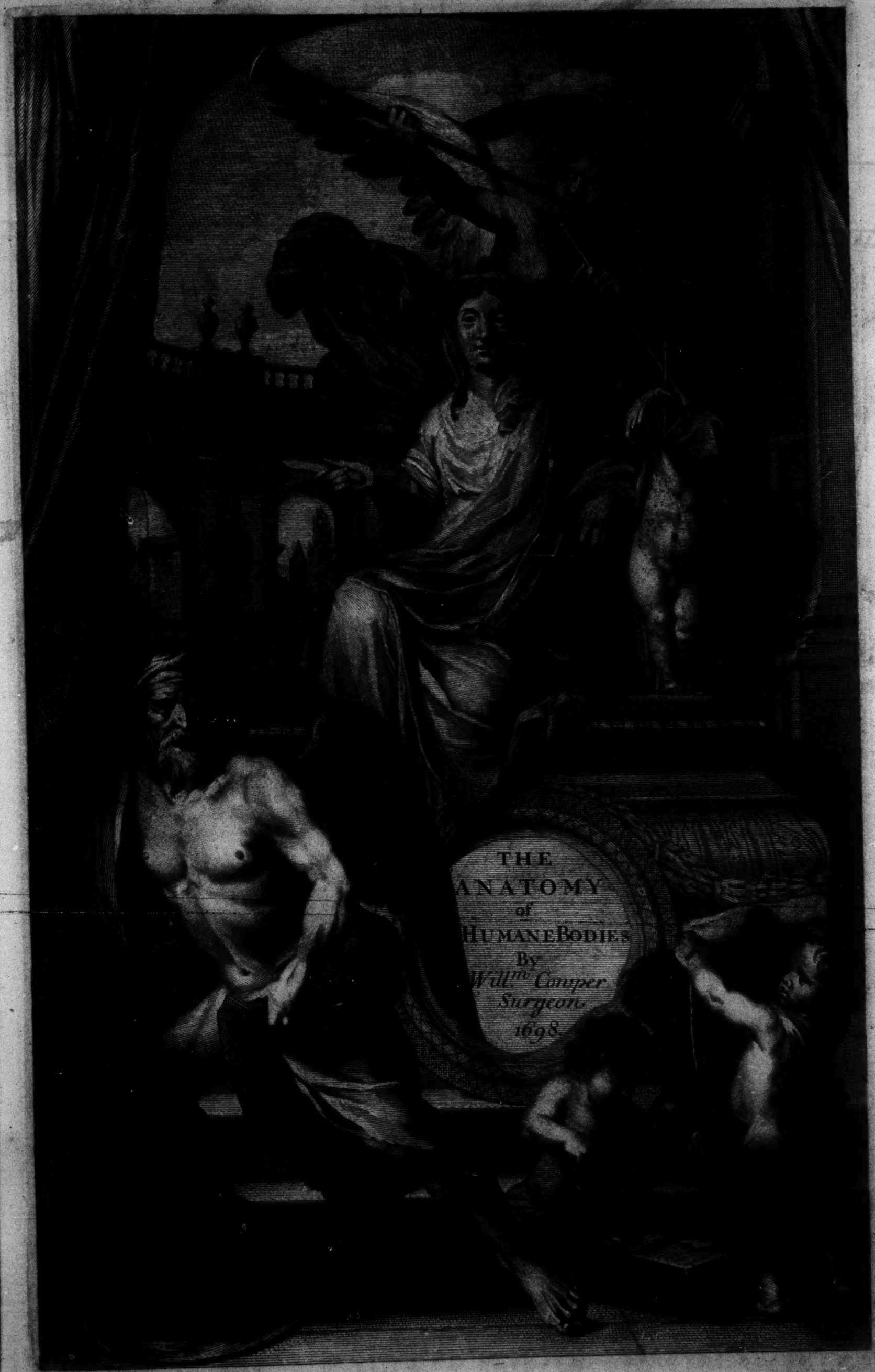
THE
ANATOMY
of
HUMANE BODIES
By
Will.m Cowper
Surgeon.
1698.

THE

ANATOMY

OF

HUMANE BODIES,

WITH FIGURES

DRAWN AFTER THE LIFE

By ſome OF THE BEST MASTERS in Europe,

And Curiouſly Engraven

In One Hundred and Fourteen Copper Plates,

ILLUSTRATED WITH

LARGE EXPLICATIONS,

CONTAINING MANY NEW

Anatomical Diſcoveries,

AND

CHIRURGICAL OBSERVATIONS:

TO WHICH IS ADDED

AN INTRODUCTION

EXPLAINING THE

ANIMAL ECONOMY,

WITH A COPIOUS INDEX.

BY

William Cowper.

OXFORD

PRINTED AT THE THEATER,

For SAM. SMITH and BENJ. WALFORD, PRINTERS to the ROYAL SOCIETY,

At the *PRINCES ARMS* in *St. PAUL'S CHURCH* Yard,

LONDON MDCXCVIII.

ANATOMY

OF

HUMAN BODIES.

OXFORD

TO THE

RIGHT HONORABLE

CHARLES MONTAGUE,

FIRST LORD OF THE TREASURY; CHANCELLOR OF THE EXCHEQUER; ONE OF THE LORDS OF HIS MAJESTYS MOST HONORABLE PRIVY-COUNCIL; AND PRESIDENT OF THE ROYAL-SOCIETY, *&c.*

SIR,

Having heard from those Persons who have often the Happiness of waiting on You, how easie an Access You give to All, I have presum'd to ask the Honor of being admitted into Your Presence.

The DEDICATION.

If this Addreſs may be thought too forward, it will be ſome Excuſe, to have it known, that I was juſtly afraid of being prevented by thoſe Numbers of Men, Eminent in all Faculties and Profeſſions, who are preparing to make the ſame Attempt upon You. The Peace, *which His Moſt Sacred* MAJESTY *has with the greateſt Glory brought Home to us, as much as it owes to the Influence of Your particular Counſels, will be very far from allowing You any Share of that Reſt, which it affords to all* Europe *beſides: Believe me,* SIR, *the Men of Letters knowing now, that Your Thoughts are no longer taken up by the* War, *are all ready to break in upon You with their Offerings; they look on You as their declar'd Patron and Protector; they have upon this Proſpect recover'd their Spirits, and enlarg'd their Hopes; and ſome of them have gone ſo far, as to think they find You Born for their Advancement, under that very Star, which was never before obſerv'd to ſhine out in all its Luſtre, but only at the Birth of the Roman* Mecænas, *and the French* Richlieu *and* Colbert.

Every Art and Science pretends a Right to approach You, becauſe every one of 'em is Familiarly known to you: ANATOMY *has this alſo in particular to Alledge for it ſelf, that, having receiv'd its Chief Improvements and Advantages from our own Country-men, it may be accounted of* Engliſh *Growth; which the World will agree, is the moſt effectual Thing that can be ſaid of it, to Recommend*

it-

it to Your Protection, who lay the Honor and Interest of England *ſo near Your Heart, and whoſe Love for Your Country, is not to be out-done, but by the Love Your Country returns You.*

The Favor of Great Miniſters to the Learned, is a Subject that takes up but little Room in our Britiſh Annals. *It has been thought to be the Defect of ſome Former Reigns, Famous in all other reſpects; and was reſerv'd, we believe, to Compleat the Glories of This. My Lord Treaſurer* Burleigh *was a better Servant to Queen* Elizabeth, *than Patron to the* Muſes: *But were* Spenſer, *who had the Misfortune of being born a Hundred Years too ſoon, Alive at this Time, we have Inſtances ſufficient to Convince us, that his Applications would meet with no Repulſe.* Mr. Stepny, Mr. Prior, Mr. Congreve, *and many more, are as much Diſtinguiſh'd by Your Favor, as by their own Merits; the World at laſt being ſatisfied, that Polite Learning in good Hands, is ſo far from excluding Buſineſs, that it gives a Grace to it; and that a Genius truly Great, will, which way ſoever it is Directed, Exert its Force and Maintain its Rank.*

You will pleaſe to bear this Freedom, SIR, *in a Perſon who as little Capable as he is himſelf of making a right Judgment of Men, yet living in a Place, where he is ever ſurrounded on all ſides with Your Praiſes, may have leave to Remember what he ſo often hears from the Knowing and Judicious, and*

to repeat a Character, that comes Warranted to him, by the most allow'd Authorities.

The truest Mark of Worth, SIR, *is to be Valued there, where One is most Known. The People of* Westminster, *who were acquainted with the First Parts of Your Life, and have had the longest Experience of Your Virtues, own Openly their just Esteem of You, by Placing in You the Trust of Representing them in* Parliament. *'Tis there, in the Midst of Those that Choose You, that Your Excellent Conduct of Publick Affairs is still Supplying Them, and all the World, with Fresh Matter of Applause and Admiration: But they had never more Reason to be Satisfied with their Choice, than on that Glorious Day, when Right was done to Your Merit, by the Testimony of the Nation in a Vote of the* House of Commons; *where it was* Resolv'd, That it is the Opinion of this House, That the Honorable CHARLES MOUNTAGUE ESQUIRE, CHANCELLOR OF THE EXCHEQUER, for his Good Services to this Government, do's Deserve His Majesty's Favor. *A Vote, that carries more Honor in it, than all the Titles and Patents of Modern Heraldry, than all the Inscriptions of Ancient* Greece *or* Rome. *What has ever happen'd like this to any of our Ancestors, in all the Course of our Records and Histories? Who besides, has Receiv'd so Solemn, so Noble, and so Publick a Panegyrick from the Voice of his Country; Pronounc'd within those Walls, where the*

Tongue

The DEDICATION.

Tongue is left to its Liberty, and no Man Oblig'd to Speak otherwiſe than he Thinks? 'Tis, without doubt, the First Wiſh an Engliſh-man *would make, thus to Deſerve, and Poſſeſs the United Favor of Prince and People; and this Degree of Happineſs has been Granted to You alone: The Next is, to have a Place in the Good Opinion of Him that is ſo Univerſally Valued; and this is the Utmoſt Ambition of*

SIR,

Your Moſt Humble

and Moſt Obedient

Servant

WILLIAM COWPER.

THE
INTRODUCTION
Explaining the
ANIMAL OECONOMY.

THE Contemplation of Humane Bodies is doubtleſs one of the moſt Diverting and Noble Amuſements, in which a Philoſophical Mind can employ it ſelf. The Structure, Contrivance, and Diſpoſition of the Parts are Aſtoniſhing, and we can hardly deſire more plain and convincing Proofs of the Wiſdom and Providence of the Author of Nature, than what may be deduc'd from this Source. How ſurprizing are the Diſcoveries which the Happy Induſtry of the preſent Age has made in the Animal World: The Doctrine of the Circulation of the Blood; the *Unity* of the Veins and Arteries; the Origin and Diſtribution of the Chyle and *Lympha*; the *Ovaria* in Females; the *Embriuculi* in the Maſculine Seed, are equally certain and amazing; beſides a Multitude of other Curious Obſervations we Daily make by the Help of Microſcopes, Mercurial Injections, and ſuch like Methods.

Theſe are ſufficient Motives to induce all Inquiſitive Perſons, and Lovers of Natural Hiſtory, to the Study of *Anatomy*; but all Profeſſors of Medicine are more immediately concern'd to be Acquainted with it; this being little leſs than the *Baſis* and Foundation of their Art. Without a due Knowledge of the Animal Mechaniſm, I doubt all our Attempts to Explain the Multiform Appearance of Animal Bodies, will be Vain and Ineffectual, and our Ideas of the Cauſes of Diſeaſes and their Symptoms, as Extravagant and Abſurd as thoſe of the *Chineſe* and *Indians*; nay I am afraid the whole Art of Phyſick will be little better than Empirical.

But if the Knowledge of our Bodies do's ſo much conduce to advance true Philoſophy and Medicine; it is not leſs required in the Practice of Surgery: In this Caſe it ſeems not meerly convenient, but abſolutely neceſſary; I mean ſo far as concerns the External Parts, ſince the Artiſt here, do's not as in the former Inſtances, Acquieſce in Contemplating his Subject, and the Manner how it is Affected; but is often oblig'd to Perform ſome Difficult, and perhaps Hazardous Operation on it. For my Part I cannot forbear wondring at the Confidence of Ignorant Men, who dare Attack a Humane Body, make Inciſions, apply Cauſticks Actual and Potential; without a due Knowledge of the Site, Poſition, Dependance, and other neceſſary Conſiderations of the Parts concern'd. The Fatal Conſequences of theſe bold Practices are frequently felt, an Inſtance or Two of which, are Accidentally ſhewn, *Tab.* 13. *Fig.* 1. *Tab.* 15. *Fig.* 2.

I muſt confeſs frequent ſeeing and aſſiſting at Chirurgical Operations may diſpoſe Men to Perform the like again, when Circumſtances in all Points ſhall agree; but without a Competent, if not Accurate Knowledge of *Anatomy*, and actual Adminiſtration of Diſſection, ſuch Perſons muſt be a long Time Spectators, before they can Arrive at a tolerable Pretence to a General Practice: And therefore as I cannot but deplore the Profound and Univerſal Ignorance which prevails, ſo I would candidly recommend it to moſt of the Surgeons in this vaſt and populous City, to apply themſelves with more Induſtry than they have hitherto done, to ſo Uſeful a Part of their Art; who would ſoon then be convinc'd this was no Diſhonour to themſelves, and ceaſe to Reproach others who have ſpent ſome of their vacant Hours in theſe Exerciſes.

But this is foreign to my purpoſe, and therefore I ſhall Addreſs my ſelf to the Buſineſs now before me, which is to Preſent the Reader with a Brief and General Plan of the *Animal Oeconomy*, as an Introduction to the following Tables.

All the Functions of an Animate Body may be well enough divided into *Natural* and *Animal*; by *Natural*, I mean all which Terminate in the Body, and Conduce to the preſervation of the Individual or Propagation of the Species; by *Animal*, I underſtand ſuch, in which the Soul is concern'd, which in Regard of the Body to which it is United, are Paſſive or Active; the Firſt is Senſe; the Latter Voluntary Motion. For the more Orderly Diſtribution of the Whole, we ſhall firſt Treat of the Former, leaving the *Animal* Functions to ſucceed; and here we ſhall follow the Proceſs of Nature; beginning with the Firſt Reception of the Aliment in the Mouth, and purſuing it thence thro' its ſeveral Stages.

After the Aliment is taken into the Mouth, (for the more Commodious doing of which, the *Dentes Inciſorii* are often Employ'd) it here ſuffers Comminution, and is mixt with *Saliva*, which is Previous to the Second Preparation, it receives in the Stomach. This Operation is call'd Maſtication, and is perform'd by the Lower Jaw, Variouſly mov'd by its Proper Muſcles, and Aſſiſted by the Tongue, Cheeks, and Lips; which laſt, ſtill apply the Leſs divided Parts of the Maſs, to the *Dentes Molares*, for it's due Comminution; while all the Neighbouring Muſcles in their ſeveral Actions, Compreſs the Parotid, Maxillary, Sublingual Salivary Glands, and thoſe of the Lips, Cheeks, *&c.* and force them to Diſcharge their Contents to mix with the Maſticated Aliment, now ready for *Deglutition*.

The Aliment after it has undergone this Alteration, do's not Deſcend into the Stomach by its own Weight, but is convey'd thither by the joint Action of the Muſcles of the Tongue, *Os Hyoides*, *Fauces*, and *Oeſophagus*; all which Conſpire in *Deglutition*, by Raiſing and Dilating the *Gula*, and Protruding the Meat into it. The whole Action do's very much reſemble the pouring Corn into a Sack, and is done in the Manner I ſhall juſt now Deſcribe. The Root of the Tongue being Depreſt by means of its Muſcular Fibres, its Tip and Sides are applied in a Semicircular Manner, to the Inſides of the whole Range of Teeth of the Upper Jaw or Gums, when theſe happen to be wanting; and the Whole in this Poſition is drawn Upwards, by the *Muſculi Styloglo ſſi* and *Stylohyoidei*, *Tab.* 14. *Fig.* 1. *Tab.* 15. *Fig.* 1. At the ſame Time the *Fauces* are Rais'd by the *Muſculi Stylopharyngæi*, which by their Oblique Poſition, (as is Noted *App. Fig.* 38.) draw open their Mouth, and Dilate that Cavity. Now Two Thirds at leaſt of the Upper Surface of the Tongue, being applied to the Roof of the Mouth, and drawn as we have now Deſcrib'd, Upwards, and Inwards; the *Epiglottis* is Depreſt in ſuch Manner, that the Aliment is Protruded over it (as on a Bridge) into the Dilated Cavity of the *Fauces*, and thence by the Contraction of the *Muſculus Pterygopharyngæus* and *Oeſophagæus*, *App. Fig.* 38. it is Depreſt into the *Gula*, which Helps its Deſcent into the Stomach, by the Action of its Muſcular Fibres.

We muſt not omit to obſerve here, That in the Inſtant the Aliment paſſes thro' the *Iſthmus* of the Throat, the *Gargareon* is drawn Upwards and Backwards, by the *Muſculi Sphænoſtaphylini*, (Expreſt *Append. Fig.* 8.) and the

Foramina Narium by this means occluded, while the *Epiglottis* below covers the *Rimula*, as was above Noted; and by this means the Matter in its Paſſage is hindred from Reverting by the Noſe, or Deſcending into the Wind-Pipe; The firſt happens when the *Gargareon* is wanting, whether by Venerial Exulcerations or otherwiſe; or Intumified and Inflamed as in the Small Pox, and cannot yield to this Motion. We may likewiſe Note, That the *Muſculus Mylohyoideus* (*T.* 15. *F.*1.) in its Action does preſs the Sublingual and Maxillary Glands, and force them to diſcharge their ſecreted Liquors, by the *Papillæ*, ſituated at the *Frænum* or Ligament of the Tongue; and that the Muſcles which Contract the *Fauces*, have the ſame Effect on the Tonſills and other Glands of that Part; all which Liquors, diſcharged from the Mouths of their Excretory Channels, do facilitate the Paſſage thro' the *Gula*, and ſerve to Compoſe the Stomachick *Menſtruum*; of which further in the next Paragraph.

After the Aliment, thus alter'd by Comminution and Admiſtion with the *Saliva*, is received into the Stomach, we proceed next to conſider, how its Second Preparation is perform'd. The great Agent in Digeſtion is the Stomachick Juice, ſecreted from the Blood by numerous Glands in this Part, and diſcharged into its Cavity, in Conjunction with the Spittle. This is that which acts promptly upon the Meat lodg'd in the Capacity of the Stomach, and from the Mixture of theſe two Juices, is compounded a proper *Menſtruum*, by which the Parts of the Aliment are diſſolved, and receive their firſt Tranſmutation within the Body. In this Action, which is a Diſſolution of the Texture of the Alimentary Maſs, the Aerial Parts included in its Pores, now eſcape from their former Priſons, and being rarified, diſtend the whole Body of the Stomach; and this I take to be the true Reaſon why moſt Men have leſs Appetite at ſome diſtance of Time, *viz.* when this Intumeſcence is made, than immediately after they ceaſe from Eating: From the ſame Cauſe ariſe frequent Eructations, great Inflation from divers *Meats*, ſuch as Old Peaſe, Cabbage, Roots, Herbs, and other Vegetables, which very much diſturb decay'd debilitated Stomachs. I am apt to ſuſpect the Stomachick *Menſtruum* may excite an Inteſtine motion of the Particles of the Maſs in Digeſtion; which yet I do not think fit to call Fermentation, fearing ſo bold a Term may miſlead us into a Falſe Idea of a greater Conflict than really happens.

The Intumeſcence or Dilatation of the Stomach has two Effects: Firſt to compreſs the Gall Bladder and *Pancreas*, and oblige their *Ductus Excretorii* to ſpue out their Contents into the *Duodenum*; next to retard the Refluent Blood, and by this means diſpoſe the Muſcular Fibres of the Ventricle to a Contraction. The Reaſon of this laſt Hint will appear by what we have offer'd concerning Muſcular Motion, in the Introduction to our *Myotomia Reformata*.

For the Cauſe of Hunger which is an obſervable *Phænomenon* belonging to this part, I conceive it to be an Irritation of the Stomach, ariſing from a copious Quantity of this *Menſtruum*, when it wants Matter to act upon. This conjecture ſeems more probable, ſince it is Natural to diſcharge the Spittle out of the Mouth which comes into it at that Time, rather than ſuffer it to deſcend into the Stomach; and we may perpetually obſerve a depraved Appetite does follow a Vitiation of the *Saliva*, as in Scorbutick Habits, Salivations by Mercurial Medicines, and ſuch like Caſes.

When the Maſs is ſufficiently prepar'd and reduced to a Pultaceous Conſiſtence, the Stomach by the help of its Muſcular Fibres contracts it ſelf, and expels its Contents thro' the *Pylorus* into the *Duodenum*; where the Digeſted Maſs is mixed with the Bile and Pancreatick Juice, (forced to diſcharge it ſelf here as was juſt now deſcribed) which Volatilize, Subtiliate, and Separate the more Fluid and Fine Parts of the Aliment, from the more Impure and Groſs, and here it is that Chylification is firſt made perfect. Now the Bile abounding with Lixivial Salt, is apt to intangle with the groſſer Parts of the Chylaceous Maſs, and its Saline Quality not only cleanſes the Cavities of the Guts from the *Mucus*, Excreted by their Glands (*App. Fig.* 40.) (to ſmear their Inmoſt Coat, and defend the *Oſcula* of the Lacteal Veſſels from being injured by Extraneous Bodies, which may happen to paſs that way) but Stimulates the Inteſtines in their Periſtaltick Motion.

The Periſtaltick or Wormlike Motion of the Guts being thus Accelerated by the Acrimony of the Bile, the Contents of the Inteſtines are carried on, and the Thinner and more Fluid Parts, fitted for the Pores of the Lacteal Veſſels, is abſorbed by them, and the Thicker move on more ſlowly, till by the many Stops they meet with in the Connivent Valves, all the Chyle is at length abſorbed, and the Remains being meerly Excrementitious, are only fit to be excluded by Stool.

This Vermicular Motion of the Guts, is perform'd by the Alternate Contraction of their Longitudinal and Tranſverſe Fibres, (*App. Fig.* 39. 40.) which at the ſame Time convey the Digeſted Maſs thro' the Inteſtinal Tube, and expreſs the Chyle into the Orifices of the Lacteal Veſſels adapted to receive it; whoſe Progreſs from the Inteſtines, till it is diſcharged into the Maſs of Blood, next preſents it ſelf to our Conſideration: By the reciprocal Action of theſe differing Fibres, and the Appoſition of the Connivent Valves (*Tab.* 39. *Fig.* 2.) the Chyle is forced into the Lacteal Veſſels, *Tab. ib. Fig.* 1.) and hence it is we cannot make any Fluid paſs from the Cavity of the Guts into the ſame Veſſels, when the Periſtaltick Motion ceaſes. A farther Uſe of the Contraction of theſe Muſcular Fibres, is to Accelerate the Chyle in its Progreſs, till the *Lympha* derived from the Arteries of the Guts joyn with it, which is done before it leaves the External Surface of the Inteſtines; by this Addition the Chyle is diluted and aſſiſted in its Progreſs towards the Meſenterick Glands; in the Cells of which it is a Second Time Mixed with a Juice or Lymphatick Liquor there Secreted from the Arteries, and ſo carried on to the *Vaſa Lactea ſecundi Generis*. Theſe Veſſels reſembling Pipes, convey the Chyle from hence, all emptying themſelves into the *Common Receptacle* or *Ciſtern*; the happy Diſcovery of which, we owe to the Obſervation of Monſ. *Pecquet*: It is here the *Lympha* returned from the Inferior Limbs and adjacent Parts, is mixed with the Chyle, (*App. Fig.* 11.) which not only ſerves to dilute, but promotes its Aſcent thro' the Thoracick Duct, (*Fig. ib.*) to the Left Subclavian Vein, (*Fig. ib.*) where this Channel empties its Contents into the main Current of the Blood. If we conſider in this Duct, its ſeveral Diviſions and Inoſculations, (reſembling the Veins of the Teſticles) its numerous Valves looking from below Upwards, its advantageous Situation between the Great Artery and *Vertebræ* of the Back, together with the Ducts diſcharging their Refluent *Lympha* from the Lungs, and the other Neighbouring Parts, we ſhall find all conduce to demonſtrate the utmoſt Art of Nature, uſed in furthering the Steep and Perpendicular Aſcent of the Chyle; which Beautiful Order is Repreſented *App. Fig.* 11. and cannot but equally Create in us Delight and Admiration.

Having traced this Animal Juice to its Reception into the Blood, with which it is at laſt Circulated and Aſſimulated, we ſhall proceed to the Blood it ſelf, whoſe Circular Motion, the various Artifices of Nature for adjuſting the Proportions and other ſubordinate Contrivances; the Manner and Cauſe of the Contraction of the Heart and Arteries, Reſpiration, with the whole Theory of the *Lympha* and Glandular Secretion in the Order of Nature, follow.

The Refluent Blood in the Upper and Lower Trunk of the *Vena Cava* meeting in the Right Auricle of the Heart, is thence expelled by its Contraction into the Right Ventricle, when the Heart is in its Diaſtole; but by its Syſtole or Contraction, it is thence driven into the *Arteria Pulmonaris*, from whoſe Capillary Veſſels it paſſes into the Extremities of the *Vena Pulmonaris*, and thence returning, is diſcharged into the Left Auricle and Ventricle of the Heart: From whence it is again by the Syſtole driven into the *Aorta*, by whoſe Branches it is convey'd thro' the whole Syſtem of the Body: But when it arrives in the Capillary Arteries, it do's not ſtop there, but paſſes into the like Capillary Veins, and from thence into the greater Branches, next into the Trunk of the *Vena Cava*, and ſo into the Right Ventricle again. In the mean time the Three Tricuſpid Valves in the Right (*Tab.* 22. *Fig.* 6.) and the two Mitral Valves (*Tab. ead. Fig.* 12.) in the Left Ventricle of the Heart, oppoſe its return into the *Vena Cava* and *Vena Pulmonaris*; and the Semilunary Valves of the *Arteria Pulmonaris* (*Tab. ead. Fig.* 14.) and *Aorta*, (*Tab. ib. Fig.* 13.) prevent its Reflux into the Ventricles. The Structure and Poſition of which Membranes, are ſufficient alone to lead all Obſerving Men into a compleat Knowledge of its Motion and Progreſs.

The Circular Motion of the Blood was firſt Explain'd, and the whole Demonſtrated in a Treatiſe expreſly Writ upon that Subject, and Publiſhed in the Year 1628. by our Learned and Ingenious Dr. *Harvey*; To omit all diſputes here how far this was known to *Ceſalpinus*, *Columbus*, *Servetus*, or any of the Anatomiſts or Virtuoſo's of the laſt Age. But the Manner how this Animal Liquor is tranſmitted from the Arteries to the Veins, has remained hitherto a Secret, and afforded Matter of Controverſie. Some pretend this is done by ſome blind Imperceptible *Meatus* in the Carnous Parts, and perplex themſelves to give Irrational and Chimerical Accounts, which we ſhall not here loſe Time to enumerate or refute. But the late great Improvement of Microſcopes has put an end to all theſe uncertain Conjectures, by diſcovering to our Naked Eye, that the Veins and Arteries are but one continued inflected Tube, and the Blood paſſes from one to the other in an uninterrupted Current; which Unity of the Blood-Veſſels by a Parity of Reaſon, we infer extends to the whole Syſtem, and will hardly be queſtioned by thoſe who conſider the Prompt Paſſage of Mercury, and other injected Liquors from the Arteries to the Veins, or ſee the Globules of Blood paſſing theſe *Anguſtia*, and reverting with incredible Rapidity in the

Fins

Fins of Fiſhes; (*App. F.* 4, 5.) which curious Diſcovery ought not to be reputed the leaſt Advancement which this Part of Natural Hiſtory has receiv'd.

The great Engine which ſets all this Motion on Foot, is the Heart, (*Tab.* 22. *Fig.* 9.) by whoſe repeated Elaſtick Contraction, the Blood is driven to the remoteſt Parts thro' the Arterial Syſtem, (*App. Fig.* 3.) and forced to continue its Motion back thro' the Venous Channels. This Elaſtick Force is primarily ſeated in its own Muſcular Fibres, whoſe Spiral Contortion (*Tab.* 22. *Fig.* 2, 3.) is very well deſcribed by Dr. *Lower* in his Book *De Corde*; but the Pendulous Poſition and the Fibres, which compoſe its Great Arteries, *i. e.* the *Pulmonaris* and *Aorta*, aſſiſt very much; and the Heart taken out of the Body and held up by the Arteries, will continue the leaſt gentle Motion impreſt on it for a conſiderable Time, which Effect can only be aſcribed to the Elaſticity of the Arterial Trunks by which it is ſuſpended.

The Heart is the immediate Inſtrument, but what is the *Vis Motrix* which forces its Fibres to a Contraction, is a far greater Difficulty, and one of the moſt Abſtruſe, Inſcrutable Myſteries of Nature. It is in this reſpect our Bodies differ from Artificial Machines; the Former having in themſelves a perpetual Principle of Motion, which the Latter by no Invention of Men can arrive at. In my Opinion the Heart of an Animal bears a great Analogy to the Pendulums of thoſe Artificial *Automata*, Clocks and Watches, whilſt its Motion is perform'd like that of other Muſcles, the Blood doing the Office of a *Pondus*. The Obſervation of the Curious Monſ. *Peyer in Parergo Septimo*, ſeems to favour this Opinion; who tells us, He has with Pleaſure ſeen the Heart renew its Contraction, by blowing into the Thoracick Duct, when the Parts have began to grow ſtiff after Death. The like Motion of the Heart I have more than once obſerv'd to be reſtor'd, by blowing into the Veins of a Dog, and pouring warm Water on it, or applying the Palm of the Hand not long after its Ceſſation.

Beſides the Quantity, doubtleſs the Quality of the Blood has a Share, ſince all Diſtempers which alter the Maſs, at the ſame Time create a Hurry and Diſorder in its Motion. To explain the Action of the Blood in this Caſe, and the Influence it has over the Motion of the Heart, we muſt conſider its Nature, Conſtituent Parts, and the Alterations it is diſpoſed to receive. This Animal Fluid conſiſts of Two Parts, Serous and Globular. The Diſtinction of theſe Parts of the Blood is evident to the Naked Eye, after its Stagnation in any Veſſel, but is clearly evinced by the Microſcope in its Circulation thro' the Tails and Fins of Fiſhes, and other Tranſparent Parts, in the ſame manner as is Repreſented *Appendix Fig.* 4, 5. where the Globules ſeem to Swim in the *Serum* in this ſtate of Mixture. Now the Blood being in this manner a Heterogeneous Liquor, Compos'd of Particles of various Magnitude and Figure, muſt be ſubject to an Inteſtine Motion; but the great Rapidity of its Current thro' the Arteries, and the *Anguſtiæ* in the Extremities of the Blood-Veſſels, not admitting any Retrograde Motion to be there made, it is deferr'd till it arrives in the Great Veins, where its Progreſs is retarded, and the Room more ſpatious, and the Inteſtine Motion there Commences, which ariſes to a Greater or Leſs Height, as the Blood is more or leſs Charged with Incongruous Parts. The Alteration which the Blood by this means receives, has no inconſiderable Share in the Heart's Contraction; and tho it be not the prime efficient Cauſe, yet we cannot deny but that it is Partial and Incitative, as appears in Fevers and ſeveral other Diſtempers, where the whole Maſs is Accelerated, and the Pulſe more frequent.

Beſides all theſe Cauſes, the Brain by its Nervous Trunks ſent to this Part, which are very Thick and Tenſe, yet lie very looſe, contributes much to this Action. And here we may obſerve, not only theſe of the Heart, but the whole Syſtem of Nerves which ſerve the *Viſcera* in the *Thorax* and Lower Belly, have their Propagines very Numerous and Tenſe, notwithſtanding which, they lie Looſe or Free in their Progreſs from the Brain to their reſpective Parts; both which concur in diſpoſing them to Receive and Retain all Impreſſions from their Extremities: This Faculty beginning to Exert it ſelf even while the *Fœtus* is in *Utero*, grows Familiar and Natural, and from this early Habit and Practice of the Infant, they after perform their Duty Sleeping or Waking, without the leaſt Advertence; but this by the by. And now if what has been Noted, ſhall be thought ſufficient to give ground to Hope Future Enquiries may diſcover more Adequate Cauſes of this great *Phænomenon*, we have obtained our Deſire, and ſhall leave theſe Hints to be improv'd by Men of more Induſtry and Leaſure.

Before we leave this Subject, we muſt not omit to Remark ſome Obſervable Artifices of Nature, for the better carrying on the Circulation. The Firſt is the Valves placed in the ſeveral Divarications of the Veins, between their Capillar Extremities and Larger Trunks: Theſe are Membranes proceeding from the inner Coat of the Veſſels, in the Form of a Creſcent or C. which was the Ancient Greek *Sigma*, and are generally Double, with their Concavity looking towards the Heart, and readily give way to the Current of the Blood thither, as is Repreſented: (*Tab.* 23. *F.* 7.) But if by its Weight, or any other Cauſe, the Blood ſhould Revert, they oppoſe it, and being Diſtended, prevent its Return from the Great Trunks of Veins to the Leſſer, and at the ſame time hinder the Superincumbing Blood from preſſing on the Inferior; concerning which conſult *Tab.* 23. *Fig.* 6.

Another Conſiderable Artifice in Nature, is the Conveying great Quantities of Refluent Blood from ſeveral Parts of the Trunk by particular Channels, inſtead of diſcharging it by the next and moſt immediate Paſſage into the Neighbouring Current. Dr. *Lower* has well Obſerv'd, that the Heart is not placed in the Center of the Body, but inclines to its Upper Part, which Poſition is neceſſary to Drive the Blood in its Syſtole to the Head, with more Force then is required to make it Deſcend to the Feet, to which its own Weight and Fluidity do's not a little Conduce. Now the Heart being ſeated ſo near the Upper Part, as that Two Parts in Three of the whole Fabrick, appear to be below it, there muſt be a like Inequality of Blood ſent to the Inferior Parts, to that which Aſcends to the Superior. And this we ſee Confirm'd by comparing the Diameter of the Blood-Veſſels Deſcending with the Aſcending, the Former being much Larger then the Latter. This great Diſproportion of Blood in the Upper Syſtem to that of the Lower, ſeems to threaten a great Diſturbance in the Animal Order, but is prevented by the Provident Care of the Author of Nature, in the Manner we are now about to Deſcribe.

The Intercoſtal Arteries *App. F.* 3. which ariſe from the Lower Syſtem, are accompanied with Veins (that Return the Blood they Exported) which do not enter into the next Large Trunk according to the ordinary Proceſs of Nature in other Parts; but are all United into One Channel (and ſometimes Two) which Aſcends by the Side of the *Aorta*, and Empties it ſelf into the Deſcending Trunk of the *Vena Cava*, there Diſcharging all its Refluent Blood; which had it been Inſerted into the Aſcending Trunk, it muſt have added ſo great a Weight, that the Blood could not have paſt up to the Heart, which it now eaſily do's. Beſide theſe, the Mammary Veins likewiſe Empty themſelves into the Subclavian, ſo that all the Blood Ariſing from the *Parietes* of the *Thorax*, the Back and its Muſcles, as well as thoſe of the *Scapulæ*, returns again to the Heart, by the Upper Trunk of the *Vena Cava*, tho' it was ſent thither from the Lower Trunk of the *Arteria Magna*.

Another Contrivance of this Nature is Obſervable in the *Vena Porta*, which Receives the Blood from the Stomach, *Omentum*, Spleen, *Pancreas*, Guts and Meſentery, ſent thither by the Cœliack and Meſenterick Arteries, which large Quantity had it Enter'd into the *Vena Cava*, immediately below the Liver or Kidneys, its Weight ſo far beneath the Diaphragm, muſt have Hindred its Aſcent; wherefore the *Vena Porta* (not unlike the *Azygos* of the *Thorax* before Noted) carries up all the Blood by another Channel, and Diſcharges it into the Extremities of the *Vena Cava* within the Liver, where it is Diluted and Propell'd by the Refluent Blood from the Splenick Vein, and afterwards aſſiſted in its Aſcent, by the Contraction of the Diaphragm.

Here I cannot forbear making a Digreſſion, and preſenting my Conjectures of the Uſe and Office of the Spleen, ſince it miniſters in this Part of the *Animal Oeconomy*. The *Arteria Splenica* is not only very large in Proportion to the Magnitude of the Spleen, but has a Remarkable Tortuous Paſſage to it, (*Tab.* 36. *F.* 1.) whence we may conceive as the Quantity of Blood ſent to the Spleen is very great, ſo its *Impetus* is very much Abated: Next the Communications between the Extremities of its Arteries and Veins are very Large, as appears by the Prompt Exit, which Water pour'd into one Finds by the other, and the Inflation of the Veins which is eaſily made by Blowing into the Arteries, when the whole Spleen and its Veins become Diſtended with it. The Lymphe-ducts of the Spleen we have Obſerv'd, (*Tab.* 36. *Fig.* 1.) to Ariſe from the *Veſiculæ* at the Extremities of its Veins, and Diſcharge their Contents into the Neighbouring Lymphatick Glands, whence it is ſent into the *Receptaculo* of the Chyle: Its Nerves are Diſtributed thro' its whole Subſtance, and ſerve to preſerve its Tone and Regulate the Separation of its *Lympha* and Nutritive Juice. But the moſt exact Scrutiny of *Anatomiſts* could never yet Diſcover any Excretory-duct ariſing from this *Viſcus*; and indeed the Patent Communication of its Veſſels ſeems a convincing Proof, that no ſuch Excretory-duct can Exiſt but muſt appear very plain. Beſides it ſeems Extravagant and Unbecoming the Wonderful Providence of Nature, to Separate any particular Juice in the Arteries here to be inſtantly Refunded into the Veins, and we can hardly conceive the Blood can ſuffer any Alteration, in a Place where the Tranſit from the one to the other, is ſo Ample.

After theſe Conſiderations Premis'd, if the Problem be Propos'd, What can be the Deſign of the great Architect of our Bodies, in the Fabrication of ſo Large and Remarkable a Part, without any Fluid Secreted in it, beſides its own Nutritive Juice and *Lympha*? I believe our *Hypotheſis* will enable us to give a ſufficient Reply to this ſeeming invincible Difficulty, with which Learned Men have exceedingly perplex'd themſelves. I conceive then the Spleen is Deſign'd by Nature, as

a Diverticle to receive a large Proportion of Blood to be Refunded by its Veins into the *Porta*, and promote the Reflux of the Blood Imported thither from the Stomach, Guts, *Pancreas*, Meſentery, *&c.* by whoſe ſlow Progreſs thro' the innumerable Glands of thoſe Parts, it returns Thick and unfit for Motion: And this ſeems but Neceſſary that a new Quantity of Blood, charg'd with a Copious *Serum*, ſhould be Infunded into this Refluent Liquor before it Arrives at the Liver, to diſpoſe it to paſs the Extremities of the *Vena Cava*, and add a freſh *Impetus* to its Languid Motion caus'd by its Long and Tortutous Progreſs. This I take to be the Uſe and Office of the Spleen, and ſeems to have all the Circumſtances the Laws of Mechaniſm require for this Purpoſe. The Novelty of which Opinion will (I hope) be no Prejudice to its Reception in the Minds of Candid and Impartial Men.

Having thus Repreſented the Circulation; the Order of Nature leads us to Reſpiration, which ſerves in conveying the Blood from the Right to the Left Ventricle of the Heart, and Impregnate it with Parts proper for its further Elaborations.

Reſpiration or Breathing is a double Action, *i. e.* Inſpiration or Receiving of Air into the Lungs; and Expiration or Expelling it again: The whole is done by means of Widening and Straitning the Cavity of the *Thorax*, in which the Lungs are contain'd.

How the Cavity of the *Thorax* may be Enlarged and Contracted, we may eaſily conceive, if we conſider the Order of its Bony *Parietes*, (*Tab.* 27, and 28.) and obſerve the Oblique Deſcending Poſition of the Ribs from the *Vertebræ* of the Back, with their Cartilaginous Connection to the *Os Pectoris*, and the Poſition and Action of the Diaphragm, as is explained *Tab.* 52. whence it appears when the Ribs are drawn up, and the Superior Convex Surface of the Diaphragm depreſt towards a Plain, the Included Space muſt neceſſarily be Enlarged; and on the contrary very much Straitned when the Ribs are drawn down, and the Upper Surface of the Diaphragm Convex towards the Lungs, as it is Repreſented in the laſt mention'd Table.

The Elevation and Depreſſion of the Ribs is perform'd by the *Proper* and *Common* Muſcles of the *Thorax*: The Firſt have their Riſe and Termination confined to the Parts Compoſing its *Parietes*: The Other, notwithſtanding their Relation to other Parts, yet chiefly reſpect This: Of the *Common* Muſcles ſome are *Principal*, immediately moving This, together with thoſe Parts from which they are derived: Others are *Auxiliary*, which by moving the Contiguous Bodies, Contribute to the better performing the Grand Motion: Thus the Elevation of the Shoulder-Blades is required in violent Reſpirations, without which the *Muſculi Serrati* (*Tab.* 20.) (which ſpring from the *Scapulæ*) (*Tab.* 29. V. W.) could not Act; hence it happens that Reſpiration is Interrupted when the Arms are in Action, by reaſon the *Scapulæ* at that time engage all their Muſcles (eſpecially the *Serrati T.* 20.) to render them Stable; and the Extenſion of the *Vertebræ* of the Neck becomes neceſſary, to the end the *Muſculi Scaleni* (*Tab.* 18. BB.) may Raiſe the Upper Ribs.

The *Proper* Muſcles of the *Thorax* are the *Intercoſtales Externi* and *Interni*, (*Tab.* 26. *Fig.* 1.) the *Triangulares*, (*Tab.* and *Fig. ead.*) the *Serrati Superiores* and *Inferiores Poſtici*, *Tab.* 28.

The *Principal Common* Muſcles, are the *Scaleni*, (*Tab.* 18.) the *Subclavii*, *Tab.* 20. the *Serrati Majores & Minores Antici*, (*Tab. ead.*) and the *Sacrolumbales*, (*Tab.* 29.)

The Auxiliary Muſcles are ſuch as Raiſe the *Scapulæ*, and draw them Backwards, and thoſe which Extend the whole Spine.

The Cavity of the *Thorax* being dilated in the manner above mention'd, the Ambient Air neceſſarily ruſhes thro' the *Aſpera Arteria* and *Bronchia*, into the *Veſiculæ* of the Lungs, whereby their whole Subſtance becomes Diſtended; and this we call Inſpiration.

In Expiration, the Air contain'd in the *Veſiculæ* of the Lungs, is Excluded; in this Action the Lungs are not meerly Paſſive as in the Former, but the Elaſticity of the Ligaments of their *Bronchia*, draw their Small Cartilages over each other, and Conduce to the Expulſion of the Air contain'd in their *Veſiculæ*.

This Alternate Diaſtole and Syſtole of the Lungs and *Thorax*, bears an Analogy to a Pair of Bellows, whoſe Two Boards being drawn from each other, the Ambient Air neceſſarily ruſhes in between them, and Fills the Internal Space enlarg'd by the Deduction of their Sides; which Air is again Expell'd from thence, by Approaching them towards each other.

The Inducements the Author of *Nature* had to Frame this Pulmonary Organ, are many; by this the Aerial Particles paſs to the Maſs of Blood, which Rarifie, Subtilize and render it fit for thoſe Elaborations it afterwards undergoes: By theſe the Tenacious *Serum* of the Blood is Attenuated, and the whole Maſs rendred fit for Motion; the Effects of which are Evident in thoſe Rhumatick *Aſthmas* and other Caſes, which Oblige ſome to leave this Town for a Clearer Air.

The Lungs are the Intermediate Paſſage between the Two Ventricles of the Heart, whereby the whole Maſs of Blood paſſes thro' their Large Blood-Veſſels in an equal Rapidity and Quantity, with that of all other Parts of the Body beſides, and do by this means diſcharge the Blood of a great Quantity of its *Serum*, by *Halitus* in Expiration; wherefore the Accurate Dr. *Tyſon* Reckons them among the Number of Glands.

This Alternate Action in which Reſpiration conſiſts, is Neceſſary, to the End the Blood may paſs the Lungs, whoſe *Veſiculæ*, if they were conſtantly Diſtended by the Inſpired Air, the Extremities of the Pulmonick Blood-Veſſels would be Compreſt; and on the contrary, if theſe *Veſiculæ* were Collaps'd (as after Expiration) their Blood-Veſſels would be conſequently Corrugated; but by this Viciſſitude they become Permeable, and the Blood eaſily paſſes their Extremities.

We have Trace'd the Aliment from its Firſt Reception till it is Elaborated into Blood, and purſued in its Motion and Circulation thro' its ſeveral Channels. We ought next to take a View of the ſeveral Liquors or Fluids ſeparated from it in its *Tour*. All Animal Juices except the *Chyle* are ſeparated from the Arterial Blood, which common Material in its Percolation in the Brain and Nerves, yield the Contents of their Fibres; in the Glands of the Mouth and Throat, the *Saliva*; in the *Mammæ*, the Milk; in the Kidneys, the Urine; in the *Teſtes*, Sperm; (not to name the Sweat, Mucilage of the Joints, *&c.*) and thro' the Univerſal Body, a Copious Quantity of *Lympha*; which is not applied to any diſtinct Uſe in the *Animal Oeconomy*, but is all diſcharg'd into the Great Cyſtern or Receptacle of the *Chyle* and Subclavian Vein, and ſo Refunded into the Refluent Blood.

The Doctrine of Secretions is the laſt and only remaining Part of thoſe Natural Functions, which are directed to the Preſervation and Subſiſting of the Individual. For the Nature and Properties of theſe Liquors, their Uſe and Office, and the peculiar Structure adapted for the Percolation of one, and excluding the reſt; we muſt remit the Reader to the Deſcription of the Organs themſelves, contenting our ſelves here with the Theory of the Origin of the *Lympha*, and Secretion in General.

The Knowledge of this Animal-liquor call'd *Lympha*, and the Ducts which Convey it, is owing to the Induſtry and Searches of this preſent Age. But whether *Rudbeck*, *Bartholine* or our Countrey-man Dr. *Jolive* ought to carry the Honour of the Diſcovery, I ſhall not pretend to decide. But the Riſe, Courſe, and other particular Circumſtances needful to inform us of their Uſe, and the Deſign of Nature in the Fabrication of theſe Ducts, has not been hitherto, at leaſt fully, Demonſtrated. Some have pretended to derive theſe Ducts from the Nerves, others from the Membranes or Tendinous Parts of the Muſcles; but theſe are Impertinencies ſcarce worth a ſerious Refutation.

The diligent *Melpighius* in his Epiſtle to the *Royal-Society*, is ſollicitous in enquiring whether they are not Excretory-ducts to Export the Juice Secreted in the Conglobate Glands, ſince there is none of theſe Glands ſo inconſiderable to be found which has not its Lymphe-ducts belonging to it, as well as its Nerves and Blood-Veſſels. After ſeveral Obſervations premis'd, he concludes they Ariſe in exceeding Minute, and ſcarce perceptible *Circuli*, from the Leſſer Glands, which afterwards are United to thoſe Ariſing from other Glands, forming Greater Trunks, and ſo proceed till they Empty themſelves into the Common Cyſtern of the *Chyle*. I ſhall not repeat the Reaſons or Experiments of that Curious Gentleman to ſuſtain his Opinion, which mainly amounts to this, That in purſuing theſe Ducts, we cannot by the moſt exact Scrutiny, or any Art yet known, Trace them further. But we muſt crave leave to differ from him in this Point, and perhaps the Reaſons we ſhall offer, will be ſufficient to juſtifie our Diſſent, and give a more clear and ſatisfactory Account of the Firſt Source of this Fluid.

The Glands I muſt confeſs have a great Concern in preparing the *Lympha*, inſomuch that no Lymphe-duct can abſolve its Courſe without Touching on them; and their Neceſſity appears yet further, while we ſee other Lymphe-ducts, (when the main Trunk paſſes by,) yet emit ſeveral Lateral Branches which Inſert themſelves into theſe Glands, and after being remitted from thence, are rejoin'd to the Former Trunk (*App. Fig.* 14.) Beſides theſe Lymphe-ducts which Enter the Glands, are frequently divided into ſeveral Branches; which make their Exit again divided, and after approaching each other, join into one Current, *ib. Fig.* 13. But however Important the Glands may be, I think they are far enough from being their Source.

The Glands of the Meſentery have their Lacteals which Import, and others which Export the *Chyle* from them. We ſhall find the Caſe of theſe Veſſels to be entirely Parallel; every Lymphatick Gland we have yet been able to Diſcover having both Species of Ducts, the one to Import, the other to Export the *Lympha* from them; whence it is probable the Leſſer not differing from the Greater in Structure, but Magnitude only, they ſerve to Tranſmit the *Lympha*, and not give it its Firſt Riſe: This will be ſtill more evident, if we

conſider

conſider the Great Communication between the Blood-Veſſels and theſe Ducts.

The Firſt Origination and Extremities of theſe Lymphe-ducts, are too Subtile and Fine to be diſcern'd by the Eye, even Aſſiſted by the Microſcope, and muſt give Room for Suſpition and Conjecture. The Arteries and Veins, we have above Demonſtrated, are but one continuous Reflected Tube: For the Truth of this Aſſertion, in the Tranſparent Parts of Animals (*App. Fig.* 4, 5.) we have the Evidence of our Senſes; and that the ſame Continuity is kept thro' the whole Syſtem of the Body, no Rational Man who will pleaſe to Reflect on the Uniformity of Nature, can with any Pretence of Reaſon doubt. Now as theſe Veſſels Communicate with each other, and admit a Prompt Paſſage of Air, Tincted Liquors, Mercury, *&c.* from each to other, ſo by ſome Experiments we find they have with the Excretory-ducts, and *Vice-verſa*, thoſe Liquors which we can convey into the Excretory-ducts after Death, will paſs from them into the Blood-Veſſels and Lymphe-ducts, which Experiment I have remark'd (*Tab.* 43. *Fig.* 5.) as an Objection to thoſe who ſuppoſe Valves in the beginning of the Excretory-ducts.

From theſe Demonſtrative and Convincing Experiments, we may conceive the true Origin of the Lymphe-ducts, is from the Extremities of the Blood-Veſſels; and their Office to carry Back the ſuperfluous *Serum*, which is more Copious in the Arteries, than is perhaps convenient in the Veins, where the Progreſs of the Blood is Slower, and the Quantity much greater. This Riſe of the *Lympha* is ſtill more clear, if we conſider in ſome States or Habits of Body, when the *Craſis* of the Blood is deprav'd, ſome Parts of it paſs this way, and the *Lympha* is Ting'd by it; as it happens by Injecting Water by the Arteries after Death, when Part of the Blood ſtill remains in its Veſſels, you will ſee the Lymphe-ducts fill'd with a Bloody Water.

This Origination of the Lymphe-ducts from the Extremities of the Blood-Veſſels, we don't take to be altogether immediately from their Sides, as we do that of the Secretory Tubes, (*App. Fig.* 7.) but that they have a Double Origin, the one from the Extremities of the Arteries, and the other from the Cells or Tubes which contain the Nouriſhment of the Parts they Ariſe from: By this means not only the ſuperabundant *Serum* of the Blood in the Arteries, is carried off before it Arrives in the Veins, but the ſuperfluous Nutritive Juice alſo, is return'd with the *Lympha*.

In thoſe Parts where we find the Paſſage of the Blood between the Arteries and Veins very Patent, as in the Spleen and *Penis*, the Lymphe-ducts Ariſe from their *Veſiculæ*; as has been Obſerv'd in the Former by the Accurate *Nuck*, and by my ſelf in the Latter.

The like Origin of theſe Ducts may be Obſerv'd from the Spermatick Veins of the *Teſtes* and *Ovaria*, in which the Blood returns very little Diveſted of its Seroſity, to the end its Globular Parts may the better Aſcend in thoſe Veins, with a Leſs Proportion of *Serum*.

Theſe Ducts Empty themſelves into the *Veſiculæ* of their Glands, as is Repreſented (*App. Fig.* 13, 14.) from whence the Exporting Ducts Ariſe, and carry the *Lympha* on to the next Gland or Thoracick-duct, (*App. Fig.* 11.) and ſo to the Subclavian Vein. Thus we find the Motion of the *Lympha*, *Chyle* and Nutritive Juice, is propell'd by means of the Syſtole of the Heart, by which all the Secretions of the Animal Fluids, are in like Manner carried on.

In the Seventh Figure of our *Appendix* we have Expreſt the Secretory Tubes Ariſing from the Venous, as well as the Arterious Part of the Sanguineous Channel before its Inflection; becauſe we find there is a Tranſit from the Veins into theſe Veſſels; yet in my Opinion moſt of them Ariſe from the Artery, where it Commences to grow Conical, where the Sides of the Veſſel thro' the Efforts made by the Parts of the Blood propell'd, receive a more direct Preſſure than in their Cylindrical Extremities, and the Particles Adapted to their Pores, are driven into the Tubes deriv'd from them.

By this Scheme, the Origin of the *Lympha*, and the Manner of Secretion, is well enough Explain'd. But why the *Saliva* is ſeparated in the Parotid Maxillary and Sublingual Glands, the Bile in thoſe of the Liver, the Urine by the Kidneys, *&c.* muſt be deduc'd from their peculiar Structure; the Magnitude, Figure of their Pores, and Various Diſpoſition of their Arteries, having a mighty ſhare in theſe Operations. Thus we may Obſerve the Arteries of the *Teſtes*, have a long and Flexuous Progreſs, and contrary to the ordinary Method of Nature, are ſmaller at their Originations from the *Aorta*, than in their Trunks after a farther Deſcent, as we have Noted (*Tab.* 45.) all which conduce to abate the *Impetus* of the Blood, before it Arrives in the *Teſtes*. On the other Hand the Current of the Blood to the Kidneys, (by the Largeneſs, Short and Streight Courſe of the Emulgents, and their Vicinity to the Left Ventricle of the Heart,) is very Rapid, which diſcharges a great Quantity of Urine, ſoon after the Uſe of Chalybeat Waters, or other plentiful Drinking, whilſt it is infinitely more ſlow in the Salival Glands, *Pancreas*, Liver, *&c.* We ſhall not here recite any further Particulars, hoping the Reader will peruſe our Tables and Diſcourſe of the ſeveral Organs.

Having done with our Doctrine of the Firſt Order of Natural Functions, we proceed to the Second, or thoſe which ſerve for the Propagation of the Species; which Naturally divides its ſelf into Two Parts, (*viz.*) Generation, and Accretion, or what concerns the *Fœtus* in its Formation, and by what means and ſteps it's carried on to an Adult State. Since Animal Bodies are Tranſient and Temporary, the Author of Nature has endued them with the Power of Propagation, and a Set of Proper Organs to continue their *Species*, and furniſh a conſtant Supply of new Individuals. From the Difference of which Organs of Generation Ariſes the difference of Sexes.

All Animals have been Divided into Viviparous and Oviparous, till Dr. *Harvey* remov'd the Diſtinction, by Demonſtrating all Living Creatures to derive their Original from Eggs, with this Difference only; in one the *Fœtus* is perfected within, and in the other without the Mothers Body. This Doctrine of that great Man has ſince been fully evinc'd by the repeated Diſſections, Obſervations, and Experiments of Later *Anatomiſts*: No *Species* of Fowls, Fiſhes and Quadrupedes are found to want them: The *Fœtus* being ſometimes found in the paſſage between the *Ovarium* and *Uterus*, and the *Alveoli* deſerted by them, are ſufficiently diſcernable in all *Animals* after Impregnation; ſo that the Exiſtence of Theſe cannot be doubted, or that there is a perfect Conformity between the *Pullus in Ovo*, and the *Fœtus* in the Womb. But here we muſt diſtinguiſh the Eſſential and Conſtituent Parts, from thoſe which are only Alimentary and Acceſſory. It is the *Cicatricula* alone in the Eggs of Fowls, in which reſide the Rudiments of the *Fœtus*, whilſt the *Vitellus* and *Albumen* prepare and ſupply its Nouriſhment, both bearing an exact Analogy to the *Lobes* and *Plantula Seminalis* in Vegetable Seeds. The Seminal *Veſicula* or *Ovum* found in the *Teſtes* of Women, *&c.* agrees in every reſpect with the *Cicatricula*, and the other Parts are unneceſſary, becauſe the *Fœtus* is nouriſh'd by Aliment ſupplied from the Mothers Body. Since the Diſcovery of theſe Eggs, the Ancient Doctrine that the *Fœtus* was Form'd from the Commiſtion of the Male and Female Seed, has been by all Rejected, and that Liquour which has been taken by all preceding Ages for Seed in the Latter, is found to be only a Mucous Matter, Secreted from the Glands of the *Vagina*, (*Tab.* 51. *F.* 3. C.) and diſcharg'd without the Body; which in Mares, Cows, and many other *Animals* is in much greater Quantity, than is poſſible to be contain'd in their *Teſtes*.

Tho' Generation *ex Ovo* may be juſtly reputed among the Modern Improvements of Anatomy, yet this did not altogether eſcape the Notice of the Sagacious *Hippocrates*, who in his Book *De Natura Pueri*, informs us, the *Embryo* after Conception is Included in a Membrane, exactly reſembling an Egg without its Shell, and deſcribes the Rudiments of the *Umbilicus* and *Placenta*, with its *Plexus* of Blood-Veſſels, and the Pellucid Liquor of the *Amnios* after the ſame Manner as Repreſented (*Tab.* 57. *Fig.* 2.) This Accurate Obſervation, he acquaints us he made from an Abortion artificially procur'd within Six Days after Conception, to preſerve the Reputation of an Incontinent Wench; which remarkable Paſſage (not ordinarily taken Notice of) was ſhewn me by my very Ingenious Friend Dr. *Fern*. Much of the ſame Age or ſomething more, and agreeing with the Deſcription of *Hippocrates*, are the Secundines which the Learned Dr. *Hannes* keeps among his other Anatomical Collections.

Upon the Invention of theſe *Ova*, *De Graaf* and Others, who have ſucceſsfully employ'd themſelves in their Enquiries on this Subject, began to Erect an Opinion, That the Female only furniſh'd the Matter of the *Fœtus*, and the Male ſerv'd to Actuate it by its Prolifick Influence. This Opinion, which derogates much from the Dignity of the Male-Sex, prevail'd till *Monſ. Leeuwenhoeck*, by the Help of his Exquiſite Microſcope, in which he has been well purſued by Mr. *Melling*, detected Innumerable ſmall *Animals* in the Maſculine Sperm, and by this Noble Diſcovery, at once remov'd that Difficulty, and added much to the Theory of Generation: In his Letter to the *Royal-Society*, he Acquaints them he had obſerv'd Incredible Numbers of theſe *Animalcula* in the Teſticles of Froggs, ſo ſlender, as not to exceed the Thouſandth Part of a ſingle Hair, with a Head proportionably larger than the reſt of their Body, all Variouſly moving to and fro; That he had found the ſame in the Teſticles of all *Animals*, which he had Inſpected; and in another, he gives them an Account, That in the Spawn of a *Cabeliaw* he had found them to be ſtill Leſſer, and more than Ten Thouſand Swimming about in a Portion of Seed, not exceeding a Grain of Sand; and pretending to find by a Formal Computation all the *Animals* contain'd in the *Lactes* of this Fiſh, to exceed more than Ten times the Number of Men on the Surface of the Earth. Fœcundation he eſteems to proceed from one of theſe Numerous *Animalcula*, after Ejection, ſtriking thro' the Pores or Perforations on the Sides of the *Ovum*, and Lodging it ſelf in the *Cicatricula*, which is diſpos'd to Receive and Nouriſh it.

From this ſurprizing Diſcovery, it is evident That

no *Aura Seminalis*, or Influx of Active Spirituous Matter do's Delineate the *Fœtus*; and that Obſervation of *Malpighius* Illuſtrated, That before Impregnation, no *Veſtigia* of the *Pullus* could be found, and yet in ſome few Hours after, it is diſtinct and viſible. Having thus taken a ſhort Proſpect of the Materials, we muſt proceed to the Order and Progreſs of Generation, from the Inchoation, till the Perfection of the *Fœtus* in the Womb, and its Excluſion, and thence till its full Growth, or Dimenſions preſcrib'd by Nature to the Species.

The *Arteriæ Spermaticæ* in Men bring the Blood to the *Teſtes*, in whoſe Convolutions, it is Prepar'd and carry'd by the *Vaſa Deferentia* to the *Veſiculæ Seminales*, where it is Lodg'd till in the Time of Coition, it is Injected into the *Vagina Uteri*. The Manner of the Erection of the *Penis* in applying it to the Tranſverſe Ligament of the *Oſſa Pubis*, by the *Muſculi Erigentes* and the Conſtriction of the *Corpus Cavernoſum Urethræ*, by the *Muſculi Acceleratores*, to Stop the Refluent Blood, and Inflate the Bulb and Cavernous Bodies, I ſhall wave Repeating, having amply Deſcrib'd this Artifice, in the *Appendix* to my *Myotomia Reformata*.

The *Semen* Injected into the *Vagina* of the Woman, is Convey'd to the *Ovaria*, thro' the Womb it ſelf and the Falloppian Tubes; which, in the Time of Coition, by means of their Reticular Structure, are Inflated and ſtrictly Embrace them. We have Deſcrib'd the Manner how the Foliated Expanſions of the Left Falloppian Tube, Embrace the *Ovarium* on that Side, and are Diſtended by the Refluent Blood from the *Vagina*, whoſe Veins being Compreſt by the *Penis* in Coition, all, or the greateſt Part of its Blood, paſſes up by the Spermatick Veins, (which Inoſculate with the Hypogaſtrick) and the Diſtended Tubes are Incurvated by the Broad Ligaments of the *Uterus*, and the *Fundus Uteri* being Diſtended alſo, and at the ſame Time the External Air Pent out by the *Penis*, a free Paſſage is left for the *Semen* to the *Ovarium*. This I prefer as a more Compendious way of Conveying it, than either thro' the whole Maſs of Blood, which muſt in my Opinion too much alter it, or thro' the Porous Subſtance of the *Uterus*, as others would have us believe. Nor can I conceive why any Man ſhould ſcruple to think theſe ſmall Animals may paſs ſome Pore in the External Membranes, as they do in Froggs, Fiſh, *&c.* where the *Ovula* are ejected out of the Female, before they are Impregnated by the Male, rather than ſuppoſe they ſhould paſs by the Spermatick Arteries to the *Ovarium*, after ſeveral *Circulations* thro' the whole Syſtem of the Body. The immediate and direct Paſſage of the *Semen* is very much confirm'd, by comparing the Appearances of theſe Uterine Parts in Fowl, eſpecially Hens.

One, or ſometimes more of theſe *Ova* happening to be Fœcundated at a Time, are diſtended and break the *Pedunculi*, by which they are affix'd, and leaving their *Folliculi*, paſs into the Falloppian Tube, which reſembling the Ovi-ducts in Birds, receive and convey them to the *Fundus Uteri*. The manner how they are carry'd on is not leſs Mechanical, than moſt other Operations in the *Animal Oeconomy*; for as the Turgeſcence of the *Penis* firſt remits in its Extremity, ſo do's this exactly after the ſame manner, and by Conſequence drives the *Ovum* contain'd in it to the *Fundus* of the Womb.

After the *Ovum* is arriv'd here, it Fluctuates about ſome Time without being fix'd, and receives Nouriſhment by Appoſition only, till at length ſome of its Veſſels begin to Germinate, and afterwards Inoſculate with thoſe of the *Uterus*. The Arteries of the *Ovum* protruding themſelves into the Veins of the *Uterus*, and the Veins *Vice-verſa* into the Arteries, from which mutual Intertexture of the Veſſels, the *Placenta* is compos'd.

By Intervention of the *Placenta* and Umbilical Veſſels, the *Fœtus* receives Blood from the Mother, and a common Circulation is continu'd, the Particulars of which, and the Difference of its Courſe from the Circulation after the Birth, is Deſcrib'd in the Explication of the following Tables.

The Aliment for Nutrition of the *Fœtus*, ſeems to be a ſort of Chylous Juice ſeparated by the Glands of the *Placenta*, and repoſited in the Capacity of the *Amnios* (*Tab.* 55, 58.) which Grows conſiderable for its Quantity in the Second and Third Month, and the *Fœtus* begins to take it in at its Mouth, for ſome time before its Birth, whence it is convey'd to the Stomach and Inteſtines, and Part paſſes into Chyle and Blood-Veſſels, according to the Ordinary Method of Nature in an Adult; the remainder Compoſing the Excrement we find in the Inteſtines of the *Fœtus*, and ſometimes Floating in the Liquor of the *Amnios*. Beſides which, the *Mammillæ* of Recent-born Infants of both Sexes, contain a Serous Milky Liquor, which is diſcharg'd into the Liquor of the *Amnios*.

After the *Fœtus* has lain Nine Months in the Womb, it Arrives at ſuch a Magnitude as makes it uneaſie both for want of Room and Aliment. Beſides the Excrements voided from its *Anus* foul the Contents of the *Amnios*, and moleſt the *Fœtus*, which by its frequent and ſtrenuous Struglings, ſhakes the *Placenta*, and breaks the ſlender Veſſels, which Connect it to the *Uterus*; from the Conſpiring of which Circumſtances, Parturition muſt neceſſarily follow.

After the Secundines are remov'd, and the Infant firſt Opens its Mouth, the Ambient Air ruſhes into the Lungs, and Diſtends the *Veſicula Aereæ*, which afterwards remain in ſome meaſure Inflated, becauſe the Extremity of the *Bronchia* which Open into them, are much Leſs than the *Veſiculæ* themſelves, and ſome Part of the Air will ſtill continue in them; whence they Gain a greater Specifick Lightneſs, and Swim in Water. The Pulmonick Blood-Veſſels which before the Birth lay Collaps'd, have their Trunks and Ramifications Extended, and admit the Blood to paſs thro' them; the *Foramen Ovale*, and *Canalis Arteriosus* not lying in a Direct Line to the Propulſion of the Blood; theſe Paſſages in Tract of Time, become Obliterated, and all the Blood from the Right Ventricle of the Heart, paſſes thro' the Lungs, before it can Arrive at the Left. Theſe Alterations of the *Oeconomy* happen after the *Fœtus* is brought into the World, and Expos'd to the External Air.

Having ſeen how the Infant is Generated and Uſher'd into the World, with the Alterations which attend its Birth, we muſt conſider next by what means Nutrition and Accretion are Effected, or the Steps by which it proceeds inſenſibly from ſuch ſmall Beginnings, to its due Size and Dimenſions. It is certain, that the Bodies of *Animals* are nothing elſe than a Vaſcular Compages, and all their Parts Exiſt in the Fœcundated *Ovum*, which by the Acceſſion of New Matter, are only Diſtended and become Viſible. From which Conſideration we may infer, That the Augmentation of the Body is made by a Simple Extenſion of all the Tubes, Veſſels and Cells; which when they will no longer recede to admit the Nutritious Particles, to be Lodg'd in the Interſtices of the Fibres which Compoſe their Parietes, and there remain no more *Oſtiola* in the Sides of their Veſſels, by which the Fluids can Open a Paſſage, the Body is Arriv'd at the utmoſt limits of its Growth. This Tenſeneſs and Contiguity of the Fibres which refuſes to admit more of the Nutritious Parts, is that which Determines the Magnitude of *Animals*, and the ſame Hypotheſis will ſerve to Explicate the differing Sizes of Individuals of the ſame Species. In this Manner the Bones Arrive at their full Dimenſions, and then preſerve their Stability and Figure, whoſe Accretion and other Accidents Ariſing from its Vitiation, are very well Explain'd by Dr. *Havers* in his *Oſteologia*. But beſides the gradual Increaſe and Formation of the Tubes and Veſſels, there is a neceſſity for a Supply of Fluids to maintain a Plenitude, with a conſtant Reparation of the Blood and Humours to prevent the Collapſe: Thus in an *Atrophy*, the great Emaciation and apparent Loſs of the Subſtance, proceeds from a want of Proper Fluids to preſerve the Arteries, Veins, Lymphe-ducts, *&c.* and other Channels of the Body in their due Diſtention. I muſt confeſs a Corroſive Salt in ſome deprav'd Craſes of the Blood, may conſume the Stable and Organick Parts, as in the *Spina Ventoſa*, and ſuch like Caſes, where the Bones ſometimes (as I have ſeen in one of the Fingers) are wholly Diſſolv'd, while the External Teguments have not been injur'd; but in this Caſe, contrary to the other, the Loſs is Irreparable. Hence Appears the neceſſary Diſtinction between Accretion and Nutrition, the Firſt being an Acceſſion to the Organical Parts, by New Matter Intruding into the Interſtices of their Fibres, and there remaining; and the Latter only a Supply of a Proper *Pabulum* to the Fluids, to preſerve them in a due Temper and Proportion. The Firſt being fix'd and permanent, and ſcarce alter'd once in the Term of a Man's Life, and the Laſt in a perpetual Succeſſion and Flux; which therefore requires the ſuperfluous Part of the *Succus Nutritius*, not retain'd in the Proper Tubes and Cells to be Infunded into the Lymphe-ducts, by which it is again return'd to the General Maſs; the Manner of which we may Conceive by *Fig.* 6. of the *Appendix*.

From the *Natural*, we paſs to the *Animal* Functions: That the Brain and Nervous Syſtem are the Common *Medium* of Senſe and Motion is uncontеſted; but the manner how the Impreſſions are convey'd from the External Organs to the *Sedes Animæ*, and *Vice-verſa* from thence to the Organ, and how a Material Subſtance can affect and be affected by an Immaterial, is Obſcure and ſcarce to be conceiv'd. Wherefore waving all Precarious Hypotheſes, I ſhall confine my ſelf to the Deſcription of ſuch *Phænomena* as are Matters of Fact, and undeniable, and leave the Reader at Liberty to erect what Syſtem he pleaſes. The Seat of Senſe is the Brain, whoſe Nervous Diſpenſations are the Intermediate Bodies between it and the Organs, on which the External Objects act. When the Impreſſion is made by the Object, and receiv'd into the Organ of Senſe, it is convey'd from thence with the ſame Type or Character, by an Agitation of its Nervous Expanſions and their continued Trunks, to the common Senſory: This is common to Men and Brutes, and is by *Des Cartes* made the Firſt Degree of Senſation: The Second is the Perception of the Soul attending that Motion, which immediately follows the former Degree, by reaſon of the intimate Connexion of the Soul to the *Senſorium Commune*. The Third comprehends all thoſe Judgments which we form by the Occaſion of thoſe Motions: Hence

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it follows, all Corporeal Objects are only Perceivable by us, in as much as they affect the Nerves expanded, in such and such Organs. This is the general Idea of Sensation so far as can be explain'd without Engaging in particular Schemes.

Before we enter on the Consideration of the External Senses, we shall offer a short Account of the Structure of the Brain and Nerves in general. The *Cerebrum*, (Tab. 10. Fig. 1.) *Cerebellum* and *Medulla Spinalis* (Tab. and Fig. ib.) are evidently compos'd of Two Parts: the first which appears on the Surface of the *Cerebrum* and *Cerebellum* is of a Cineritious Colour, and is call'd the Cortical and Glandulous Part; the other or internal is Whiter and Harder, and is call'd the Medullary, Calloſe, and Fibrous Part: This Order is inverted in the Spinal Marrow, where the External Part is Calloſe and White, and it's Internal, Soft and Cineritious. The Cineritious or Cortical Part of the *Cerebrum* is remarkable in those Turnings and Windings which are deeply divided by the *Pia Mater* within the Body of the *Cerebrum* (*Tab.* 10. *Fig.* 1. C.) from whence it appears to have a very large Surface. The like Contrivance is obſervable in the *Cerebellum*; the outward Appearance of the *Sulci* of which differ from those of the *Cerebrum*, and are ranged in Parallel Lines according to its Length, as expreſt *Tab.* 7. *Fig.* 2. Beſides the Cineritious Part of the *Cerebrum* plac'd on its Surface, it has ſtill other Cineritious Bodies or Protuberances added to its *Corpus Calloſum*; as the *Corpora Striata*, (App. Fig. 30. Δ Δ.) *Nates* and *Teſtes*. (Tab. 10. Fig. 1.)

In a Horizontal Section of the *Cerebrum*, its Cortical and Medullary Parts Appear, as Repreſented *App. Fig.* 30. In a Tranſverſe Section of the *Cerebellum*, an Arboreous Diſpoſition of the Latter Appear within the Former (*Tab.* 10. *Fig.* 1.) The Cineritious Colour of the Cortical Parts of the Brain Ariſes from the Number and Contortion of its Proper Blood-Veſſels, which Paſs according to the Length of the Fibres in the Calloſe and White Part.

In Viewing the Surface of the Cortical Parts, it Appears Compos'd of a vaſt Number of ſmall Glands of a Depreſt Oval Figure, from each of which Spring the Medullary Fibres, which Compoſe the Calloſe or White Part; all which make the *Centrum Ovale* of *Vieuſſens* (App. Fig. 30. n n.) before they Compoſe the *Crura Medullæ Oblongatæ*, (*App. Fig.* 29. B B.) In this Progreſs, the Medullary Fibres of the *Cerebrum*, give Originals to the Olfactory and Optick Nerves: At the Conjunction of the *Crura*, the Third Pair of Nerves Ariſe, *App. Fig.* 28, 3, 33: ſoon after the Annular Proceſs or *Pons Varolii*, (which partly Ariſes from the *Cerebellum*) (*App. Fig.* 28. s s) is Join'd with the *Crura*. In this Part of the Conjunction of the Medullary Parts of the *Cerebrum* with the ſeveral Proceſſes of the *Cerebellum*, the Fourth, Fifth, Sixth and Seventh Pair of Nerves Ariſe: and at the Beginning of the *Medulla Oblongata*, (whence Spring the Eighth and Ninth Pair of Nerves,) there is a compleat Union of all the Medullary Parts of the *Cerebrum* and *Cerebellum*; Where a Cineritious Part may be ſeen in its Middle, as Appears *App. Fig.* 29. d d. This Inverſion of the Order of the Calloſe and Cineritious Parts, is kept thro' the whole *Medulla Spinalis*.

From what has been above Obſerv'd, it Appears, the Surfaces of the Cortical Parts of the *Cerebrum* and *Cerebellum* are much larger than those of their Medullary, conſequently each Gland which helps to Compoſe them, muſt be larger in its Diameter than the Medullary Fibre, which Ariſes from it. This Conſideration will lead us ſtill farther; for ſince it's plain, the Surfaces of the Medullary Parts of the Brain and *Cerebellum*, are much larger than they are afterwards in the *Medulla Oblongata*, therefore the Fibres which Compoſe them, muſt neceſſarily be thicker in their Diameters, at each Gland, than they are afterwards in their Progreſs to the Beginnings of the Nerves, where they are conſiderably contracted, and frame the *Apex* of a Cone.

Here we muſt not omit to take notice, that all those Medullary Fibres inſervient to Motion in general, and the Organs of Taſting and Touching, are very much Contracted at the Beginnings of their Nerves, without the Body of the Brain and *Medulla Spinalis*; and on the other hand, all those Medullary Fibres employ'd in the Organs of Seeing, Hearing and Smelling are contracted, or have the *Apices* of their Cones within the Body of the Brain: Thus the Nervous Fibres concern'd in Motion in general, and ſuch as are Mov'd by the Contact of Groſs Objects, are leſſen'd between their Originals and ſeveral Divarications, *extra Cerebrum*; but those affected by the Mediation of Light and Air, within the Brain.

The utmoſt I could yet Obſerve in Viewing the Nervous *Fibrillæ* with a Microſcope (whether Compoſing the *Corpus Calloſum* of the Brain, or the Bodies of the Nerves themſelves) is, that they are Form'd of a Reticulated Compages of Fibres; which in the Latter Appear Globular; but in the Former or *Corpus Calloſum* (by reaſon of the irregular Section, or Expanding a Thin Divided Tranſparent Part of it on the Object-Plate of the Microſcope) it Appears Reticulated, and the Interſtices of its *Rete* of various Angles. This Structure of the Nervous Syſtem, ſeems to Plead againſt those Hypotheſes of the Animal Functions, Founded on the Motions of the Spirits or Fluids, Deriv'd immediately from the Brain, and Tranſmitted by the Nervous Channels. We ſhall here only preſent the Reader with an Anatomical Plan of the Organs of the External Senſes, and ſhew how Objects may be Impreſt on them and Convey'd to the *Senſorium Commune*, and leave him to Contemplate on the Elegant Fabrick of the Brain, whoſe particular Contrivances have hitherto eſcap'd the Diſcovery of the moſt Sagacious Enquirers.

The Five External Senſes, are ſo many differing Species of Perception from the Applications of Bodies to their ſeveral Organs; either Immediate, as in Feeling and Taſting; or thro' a Proper *Medium*, as in Smelling, Hearing and Seeing. The Senſe of Feeling is Extended thro' the whole Body, except ſome few Parts, as the Bones, Cartilages, *&c.* but chiefly Reſides in the True Skin, whoſe Structure, ſo far as it Relates to this Senſe, is as follows. The *Cuticula*, (Tab. 4. Fig. 1, 2, 3.) (which is a common Covering to the whole Surface of the Skin) being Remov'd, certain Papillary Protuberances Diſcover themſelves, which View'd with a Microſcope (*Tab.* 4. *Fig.* 6.) Appear made up of many Roundiſh Sudoriferous Glands, with a vaſt Number of Nervous *Fibrillæ* Expanded on their Surface: This Uneven Papillary Surface is neceſſary, to the end those *Fibrillæ* may be the more Expanded and Apply'd to Tangible Objects; ſo that the Figure, Modification and other manifeſt Qualities may be Diſcern'd, and the Impreſſions Convey'd to the Common Senſory, by the Mediation of their Nerves. Since the Extremities of the Fingers and Thumbs are (for many Reaſons) neceſſary Parts to be Endued with an Exquiſite Senſe of Feeling; therefore the Order of theſe *Papillæ* are there Converted to a Contorted Series, which Appear like ſo many *Rugæ* under the *Cuticula*, as is Repreſented in the laſt Mention'd Table, *Fig.* 4. The *Cuticula* here, as well as in other Parts of the Skin, is a neceſſary *Medium* between the Object and the Organ; but when it Grows very Thick, as in ſome Laborious Mechanicks, it becomes an Impediment. From the vaſt Number of theſe Nervous Filaments, any Solution of Continuity of the Skin it ſelf, is more Painful, than moſt of its ſubjacent Parts.

The Fabrication of the Tongue, its Papillary Surface, and the Manner of its Application to Objects, bears a great Similitude to that of the Skin now Deſcrib'd, in ſo much that ſome have reckond the Senſe of Taſting a *Species* of *Tactus*. The Structure of this Part, as well as its Coverings and Papillary Bodies, are Repreſented *Tab.* 13. where *Fig.* 2. Shews the External Membrane, in which the Papillary Bodies lying under it, Appear variouſly Figur'd, ſome Conical, others Round, and others with their Extremities Forked. In ſome Animals theſe *Papillæ* are externally Large, and their Extremities Cartilaginous and Horny, but in Humane Tongues it is far otherwiſe; the Outward Membrane here being very Soft, the *Papillæ* Numerous and Small, and appearing Villous to the Naked Eye. This Membrane being Rais'd (after ſufficient Boyling the Tongue) the next which offers, is more Spongy, Softer and full of Blood-Veſſels, *Tab. ib. Fig.* 6, 7. This is Perforated by the many Nervous *Papillæ*, immediately Plac'd under it: (*Tab. ib. Fig.* 8.) the Tops of which are afterwards Receiv'd in the *Vaginulæ* of the External Membrane. Theſe *Papillæ* Cleave to the Fleſhy Fibres of the Tongue, and are of various Sizes and Figures as above Noted. In the Interſtices of theſe *Papillæ* are Plac'd Divers Salival Glands, the Excretory Tubes of which, Diſcharge themſelves by certain Apertures; (*Tab. ib. Fig.* 2. G G.) whereby the Villous Covering of the Tongue is Moiſten'd, and the Saporiferous Particles are readily Admitted to the *Corpora Papillaria*, whoſe Nervous Expanſions (on their Surface, like those of the *Cutis*) Tranſmit the ſeveral Impreſſions (made by Objects of Various Figures) to the Common Senſory, by the Mediation of the *Par Quintum*. Thus the Structure of the External Parts of the Tongue, Agree with that of the Skin, with this Difference, the Former being Cloth'd (in Humane Bodies) with a very Thin Soft Membrane, and its *Papillæ* very Numerous, Leſs and more Extruded or Longer; whereas the *Papillæ Cutis*, are Larger, Shorter, and Cover'd with a more Denſe Membrane or *Cuticula*. Hence the Tongue Appears to be an Exquiſite Organ of *Tactus*. However the Senſe of Taſte principally Reſides in the Tongue, yet we muſt Refer the Organs of Smelling hither, ſince Experience Shews us the Former Senſe cannot be Compleat, where the Latter is Deficient.

The External Organ of Smelling is not Confin'd within the Cavities of the Noſtrils, but is Compos'd of a very Large Glandulous Nervous Membrane, in like manner Extended within the Cavities of the *Oſſa Frontis* (Tab. 89. Fig. 1. ib. Tab. 91. Fig. 2.) Fourth Pair of Bones of the Upper-Jaw, (*Tab.* 92. *Fig.* 1. E.) and in that Part of the *Os Sphenoides* compoſing the *Sella Turcica*, (Tab. 89. Fig. 2.) all which Open into the *Foramina Narium*. Beſides theſe Cavities, the Noſtrils are furniſh'd with Divers *Oſſa Spongioſa*, Deſcrib'd, *Tab.* 92. *Fig.* 1. H. on which the ſame Membrane is Expanded. This Membrane is in a great Meaſure compos'd of the Extremities of the Olfactory Nerves, and is the Organ of this Senſe, which receives the Impreſſion made by the Odoriferous *Effluvia*, whether in Inſpiration, as in the Proper Action of Smelling; or Expiration, as in Taſting, which happens in Maſtication or Deglutition of the Aliment.

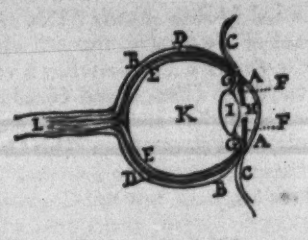
What we have hinted concerning the Complication of Tasting with Smelling, will in some Manner be evinc'd, if we reflect on that Common Practice of Holding the Nose to avoid Nauseous Tasts: And when the *Foramina Narium* are partly Obstructed, (as after taking Cold) how little we Distinguish the Proper Tasts of some Things, especially such as are Odoriferous.

The Organs of the Fourth External Sense, are the Two Ears, by which the Various Sounds Impress on the Ambient Air, are Represented to the Common Sensory. The External Ear or *Auricula* (Tab. 12. Fig. 1.) is Compos'd of a Cartilage Cover'd with the *Cuticula* and *Cutis*; whose many Contorted Foldings, are Fitted for the Reception of the External Undulating Air, and Transmitting it to the *Meatus Auditorius*. The Winding Progress of the *Meatus* seems purposely contriv'd, to prevent some Inconveniences which might Arise, from the Violent Irruption of the Air thro' too Direct a Passage to the *Membrana Tympani*, plac'd at the farther End of it: (*Ap. Fig.* 15. e.) For the same Intent, the *Cerumen* or Ear-Wax, seems to be Separated by the Numerous Glands in the Membrane of the *Meatus*, to Infringe its Motion. The Air which thus Passes the *Meatus*, Shakes the *Membrana Tympani* more or less, according to the Various Impressions made on it *ab Extra*: The Long Process of the *Malleus* (App. Fig. 15.) which is Contiguous to this Membrane, is necessarily Mov'd, consequently the *Incus* which is Articulated with the *Malleus*, (App. Fig. 16. H, I.) and the *Stapes*, which is Articulated with the *Incus*, by the Mediation of the *Os Orbiculare*, (App. Fig. 17. H I.) are all successively Mov'd by each other: Nor could any Tremulous Motions be Impress on the *Membrana Tympani* by the External Air, if the Cavity of the *Tympanum* it self had no Aperture, by which its Contain'd Air could Fluctuate, no more than a Drum it self would Sound if there were no Holes in its Sides. For this Reason a Passage from the Palate to the *Tympanum* is Form'd, (*Vid. App. Fig.* 8. NN.) By this Curious Artifice the Various Sounds Arising from the Vibrations of the External Air, are Modifi'd, and Articulately Represented to the Auditory Nerve, Expanded within the Winding Cavities of the *Labyrinth* or Three Semicircular Ducts and *Cochlea* (App. Fig. 17, 18.) by means of the *Stapes*, whose *Basis* immediately Covers the *Foramen Ovale* or Entrance to those Cavities, where the *Aer Insitus* or *Congenitus*, is said to Reside. This Air tho' call'd *Innate*, must Arise from that Contain'd in the *Tympanum*, and necessarily has a Communication with it, else we cannot see how the Vibrations made by the *Stapes*, should be Communicated to these Contorted Channels. Nor can it be suppos'd, the *Basis* of the *Stapes* has any loose Membranous Connexion to the Margin of the *Foramen Ovale* (which it must have, to keep out the Air Contain'd in the *Tympanum*;) Or that the *Stapes* adequately Closes that *Foramen*: Both which would meet with Equal Impediments from the Grosser Air in the *Tympanum*, pressing on the *Basis* of the *Stapes*, and hindring its Elevation.

The Small Muscles which move the *Malleus*, and that of the *Stapes*, like the Heart, Diaphragm and Muscles concern'd in Respiration, do their Office Inadvertently, and are Useful herein, as we have Represented them in *App. Fig.* 15, 16, 17. This Structure of the *Auricula* and Parts within the *Tympanum*, Prepare the Impressions made in the External Air, and Represent them to the Expansions of the Auditory Nerve; not unlike the Membranes and Humours of the Eye, Refracting the Rays of Light in passing to the *Tunica Retina* in the Eye, which falls next under our Consideration.

As the Air is the Vehicle of the Objects to the Two Former Organs, so the Light is to this. The Nature and Properties of Light, the Magnitude, Figure or Motion of Luminous Particles, as well as the Shape or Conformation of those Parts, which Affect the Organs of the other Senses, we omit as more Proper for the Disputes of the Schools than an Anatomical Discourse, confining our Theory of Vision to the Structure of the Parts.

In the Fabrication of these Organs, the Eye-lids or *Palpebræ* (Tab. 11. Fig. 1, 2, 3, 4, 5.) are none of the least Remarkable. The Upper is Elevated and Depress by Two Muscles, the External of which is Circular and call'd *Orbicularis*. (Tab. 12. Fig. 4.) This Draws the Upper Eye-lid down; the Internal is Straight (*Tab.* 11. *Fig.* 4.) and Pulls it up. By this Contrivance the Eye is not only Defended from Extraneous Bodies, but the Discharge of the Lachrimal Humour is Accelerated by the several Ducts, into the Internal Part of the *Palpebræ* next the Bulb of the Eye, *Vid. Tab.* 11. *Fig.* 5. The Eye it self is Spherical and Mov'd by its Proper Muscles, Represented in the last mention'd *Tab. Fig.* 7, 8, 9, 10. Its Membranes, Humours, and the Parts which Compose it being Expres't *Tab. ib. Fig.* 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24. we shall here only take Notice of its Structure, so far as Relates to its Action, and Describe the Plan made by a Section thro' the *Axis* of Vision, which will Conduce to the right Apprehending the Manner, how Objects are Represented in the *Sensorium Commune*.



A A, The *Tunica Cornea*, whose External Surface is a little more Convex than the Bulb of the Eye it self.

B B, The *Tunica Sclerotica* or *Dura*.

C C, Parts of the *Tunica Adnata* or *Conjunctiva*, which are Continu'd to the Internal Parts of the *Palpebræ*.

D D, The *Choroeides*, the Fore-part of which is call'd *Uvea*; Its Blood-Vessels Appear very Beautiful, when Injected with Mercury, and seem to Compose Divers Glandulous Bodies.

E E, The *Retina* or Expansions of the Optick Nerve, on which Objects are Depicted.

F F, The *Iris* which lies Loose or Floating in the Aqueous Humour.

G G, The *Ligamentum Ciliare*.

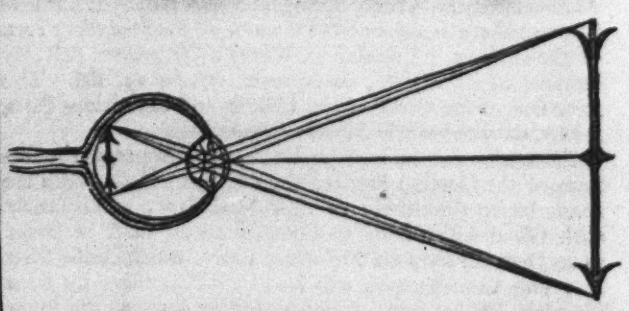
H, The Aqueous Humour.

I, The Chrystalline.

K, The Vitreous Humour.

L, Part of the Optick Nerve.

The *Tunica Cornea* Receives the Various Rays of Light proceeding from all Points of the Object, Collects and Transmits them thro' the *Foramen* of the *Uvea*, or Pupill, Refracting the Diverging Rays on each Side toward the Perpendicular. The Chrystalline Humour Receives the Rays First Infracted in the *Cornea*, and beginning to Diverge again in the Aqueous Humour, and Refracts them a Second Time; So that all the Rays proceeding from the same Point of the Object, by Passing thro' this Dense *Medium*, do Converge again, and Terminate in the same Point on the *Retina*. From this Refraction or Direction of the Rays of Light, to a Point, distinct Pictures or Images of Visible Objects are Represented on the *Retina*, as the Figures of External Bodies in passing thro' a Single Convex Glass on a Paper on the Wall of a dark Chamber, the whole will be better Conceiv'd by the following Figure, which Represents the same Section of the Eye, as the Former with the Luminous Rays passing thro'.



Thus the Rays in Passing thro' the *Cornea* and Humours of the Eyes, are Inverted, and the Image of the Object is so Depicted on the Concave of the *Retina*. How this Inversion is Reduc'd in the *Sensorium Commune* to a Right Perception, may be Accounted for in our Proper Knowledge of Things, in the same Manner, as we know when we hold a Stick in each Hand cross each other, that the Stick in the Right Touches such an Object, and that in the Left another: Thus Vision being made by the Rayes of Light proceeding from the Object, and making Due and Various Motions of the Nervous Fibres of the *Retina*, which are Communicated to the Common Sensory by the Optick Nerves with the same Type and Character; we may reckon this Sensation to be not altogether unlike that of *Tactus*.

The Last of the Animal Functions which we should here speak of, is Muscular Motion, but having already Publish'd my Thoughts conerning that *Phænomenon* in my *Myotomia Reformata*, I shall not trouble the Reader here with a Repetition, since no Experiment, nor Observation (besides that mention'd in *Tab.* 64. *Fig.* 2. concerning the Fleshy Fibres) has since Occur'd, which should Add to those Conjectures, or Favour any other.

TO

To the READER.

THE Fate of Authors, when they appear on the Publick Stage of the World, is extreamly uncertain; Good or Ill Succeß, Reputation or Diſgrace frequently depend more on the Humor and Prejudice of the Reader, than the Merit of the Performance. This hard Fortune of all Writers has made it Dangerous for any Book to venture Abroad, without ſome Harangue or Apology before it, to beſpeak a favourable Treatment. For my Part, I have no Excuſe to offer for not Complying with this reaſonable Cuſtom; but wholly reſign my Cauſe to all Well-wiſhers, to the Advancement of Anatomy, the proper Judges of this Matter; whoſe Candor and Indulgence, I doubt not, will be a better Protection, from the Defects that ſhall be Diſcover'd in this Work, than any Reaſons I ſhall be able to alledge in my Defence.

This Volume contains a General Deſcription of the Fabrick of Humane Bodies, after the Manner of a Commentary on the Tables, which Repreſent their ſeveral Organs. The preſent and laſt Age, have been Induſtrious in making Diſcoveries in the Animal Machine, by Detecting the Structure of the Heart, and Artifice of the Circulation, the Origin and Courſe of the Lymphe-ducts, the ſeveral Salival Glands and their Channels, the Texture of the Bones, and Medullary Cells, the Mucilaginous Glands of the Joints, the Organs and Proceß of Generation, the Organs of the External Senſes, in reforming the Myology, (an Eſſay on the Laſt of Theſe, with ſome Remarks on the Structure and Erection of the Penis, I ſome time ſince Publiſh'd,) all which the Reader will find in the following Deſcriptions, with my own Obſervations and Conjectures, (which in many Places differ from the General receiv'd Opinions. Beſides the Hiſtory of the Natural Structure, I have thro' the whole Series of the Work, Inſerted ſome Phænomena, I have found in Diſſecting Morbid Bodies, and ſuch Practical Inſtructions, as I hope will be Uſeful in many Caſes, to the Chirurgical Operator.

The whole is diſpos'd in this Order: In the firſt Hundred and Five Tables, after a Proſpect of the Body, with the Teguments, Hair, &c. the Parts of the Head, Neck, Brain, Medulla Spinalis follow, and ſo proceeds to thoſe of the Breaſt, Back, Loins, Lower-belly, Uterus with the Fœtus and its Adjuncts; next the Muſcles of the Limbs, and laſtly the Oſteology. Theſe Figures were Drawn after the Life, by the Maſterly Painter G. de Laireſs, and Engrav'd by no leſs a Hand, and Repreſent the Parts of Humane Bodies far beyond any Exſtant; and were ſome time ſince Publiſh'd by Dr. Bidloo, now Profeſſor of Anatomy in the Univerſity of Leyden. I ſhall take the Liberty here to acquaint the Reader, That in theſe Tables I have added above Seven-hundred References, all which are Letter'd with a Pen in the ſeveral Figures; among which it is hardly poſſible, but Miſtakes may occur in ſome Places, (by thoſe who have Inſerted them) which I hope will not be imputed to my Inadvertence. The Parts which in many Places had their Nomenclature barely annex'd, are here Copiouſly Deſcrib'd; to which, as I before Noted, are added ſuch Obſervations of the Male Conformation and Vitiated Structure, as may Illuſtrate the Pathology or Hiſtory of Diſeaſes, their Symptoms and Cauſes; I have likewiſe interſpers'd ſeveral Remarks on the uſual Method of Chirurgical Operations, with Directions for performing them in a more Exact and Succeßful Manner; and laſtly given an Account of ſeveral Caſes and Accidents rarely occurring, and not (at leaſt commonly) obſerv'd by Authors. The Appendix is partly a Supplement to the preceding Tables, and partly a Correction of ſuch Things as are not well Expreſt; for Inſtance, The two Firſt Tables preſent a Proſpect or General View of the whole Body, both on the Fore and Back-ſide, Denuded of its Teguments, and Clear'd from its Fat; where the External Muſcles with their Tendons, Faſciculi and Series of Fibres, Appear on the Surface. Theſe are not Drawn by Invention, but are Touch'd on after an Original Caſt from the Life in Plaiſter of Paris, which I have now by me. The Third Table contains a Syſtem of the Arteries Diſſected from a Fœtus, with their ſeveral Trunks and Ramifications, Delineated from the Life, which I have alſo by me Injected with VVax; how much this differs from that Deſcrib'd (Tab. 23.) may be ſoon Diſcover'd. In two other Figures of the ſame Table, are the Proſpects of the Extremities of the Veins and Arteries, as they Appear in the Tranſparent Finns of a Grigg and Flounder, view'd thro' a Microſcope. Here the Method of Circulation, the Continuity of the Venous and Arterious Channels, the Globuli paſſing them in an uninterrupted Current, is Demonſtrated. In another Figure is Expreſt our Conjecture of the Riſe of thoſe Ducts, which Export the Lympha and redundant Nutriment. In the Fourth Table, the Receptaculum Chyli is Repreſented, Fill'd with Mercury, with the Various Courſe of the Chyle-Veſſels and Lymphe-ducts, their Communicant Branches, the Lumbal Glands, the Triple-Diviſion of the Receptacle, hitherto Unobſerv'd, at leaſt not Delineated. In the remaining Tables (I fear the tedious Enumeration of Particulars may tire the Reader's Patience) are the Organs of Hearing, with the Meatus à Palato ad Aurem, and that from the Inner Ear to the External Meatus; the Foramina of the Tonſils which Evacuate the Pituita; the ſeveral Parts of the Tongue and Aſpera Arteria; the Baſis of the Brain, that of the Cranium; the Muſcles of the Face and Lips, ſeveral of which are not Deſcrib'd, and the reſt Erroneouſly.

In this Undertaking I have been Oblig'd to my Learned Friend Dr. Tancred Robinſon, in Reviſing as many Sheets as his Leaſure would give him leave. In the laſt Place, to render the whole more Uſeful, a Copious Index is added at the End; which if the Reader finds Uſeful, he is Oblig'd to return his Thanks to the Deſerving Mr. James Fern the Surgeon, who was at the Trouble of digeſting the Contents of this Work, into an Alphabetical Order, which my Avocations would by no means permit me to do.

----- If the Reader happens to Diſcover any Literal Errors, of which ſome may be found, it is hop'd he will Excuſe them, upon Account of the Haſte and Diſtance of the Preß; the Practice in my Profeſſion not ſuffering me always to Reviſe every minute Paſſage.

THE ANATOMY OF HUMANE BODIES.

BEFORE we enter on the Anatomical Deſcription of Humane Bodies, let us take a View of their External Parts, as they appear in the Living State: Here we ſhall Firſt briefly take notice of their moſt remarkable Appearance in the Embryo and Fœtus of the Womb; and thence proceed to obſerve the ſeveral Stages of Proportion from Children to thoſe of a Full-grown State, and Old Age: To theſe we ſhall add the different Proportions of Men and Women; and laſtly the External Appearance of the Muſcles and other Parts in divers Actions.

If a Præexiſtence of Parts in an Embryo was allowable, that at Twenty five days after Conception (Figured *Tab.* 57. *Fig.* 3.) would incline us to believe the Brain and whole Head had a Precedency, ſince its Magnitude then exceeds the whole Bulk of the reſt of the Parts; but as the time of the Birth advances, the Head of the Fœtus does not commonly exceed a Fourth Part in its whole Length.

The Center or Middle Part between the two Extreams of the Head and Feet of an Infant, is in the Navel; but that of an Adult in the *Oſſa Pubis*: And this Proportion of dividing Children into Four Parts, whereof the Head is one, is commonly made uſe of by *Painters* and *Sculptors*, &c.

A Child Two Years old has about Five Heads in its whole Length; but one of Four or five Years, has about Six; thus meaſured, by dividing the whole Body into ſo many Lengths, whereof the Head muſt be one. Hence it appears, as the Growth of the Body advances, there is a gradual Approach to the Proportion of an Adult of Eight, nine, or ten Faces in the whole Length.

There are many Bodies in a Full-grown State, which have not above Four or five Lengths or Faces; but thoſe are Miſcarriages in Nature, and therefore not Subjects of our preſent Conſideration.

About the Fifteenth or ſixteenth Year, Seven Faces or Lengths are then the Proportion or Meaſure, and the Center inclines towards the upper Parts of the *Oſſa Pubis*; and tho' this Proportion may ſerve indifferently for a ſhort well-ſet thick Perſon, when the Shoulders are broad, and the Limbs thick, and ſtrong; yet if on the contrary the Shoulders are ſomewhat narrow, and the Limbs ſlender, it will repreſent a Youth: And however Paradoxical it may ſeem at firſt, yet an Old Woman, or the Goddeſs *Veſta* will fall under this Proportion of Lengths, thro' the bending forwards of the Back-bones; and tho' the Limbs bear a Proportion to one of Eight or nine Faces, yet they not being duly extended (for want of the vigorous Action of the Muſcles) render the Appearance of the whole Figure very ſhort.

The Ancients have commonly allowed Eight Heads to their Figures, ſays the Author of the Obſervations on Mr. *Du Freſnoy*'s Art of Painting, made Engliſh by the Incomparable Mr. *Dryden*; but we, ſays he, divide the Figure [of a Humane Body] into Ten Faces, from the Crown of the Head to the Sole of the Foot, in the following manner: *N. B.* That this Number of Faces depends on the Age, as above hinted, and the Quality of the Perſons repreſented. The *Apollo* and *Venus de Medices* have more than Ten Faces.

THE

FIRST TABLE.

FROM the Crown of the Head 1, to the upper part of the Forehead A, is the Third Part of a Face.

The Face begins at the Roots of the loweſt Hairs, which are upon the Forehead AB, and ends at the Bottom of the Chin I.

The Face is divided into Three proportionable Parts; the Firſt contains the Forehead AB; the Second the Noſe C; and the Third the Mouth and Chin GHI.

From the Chin to the Pit between the Two Coller-bones, or upper Part of the *Sternum*, are Two Lengths of a Noſe.

From the Pit between the Two Coller-bones to the Bottom of the Breaſt, called *Scrobiculus Cordis* N, One Face.

From the Bottom of the Breaſts to the Navel R, one Face; the *Apollo* has a Noſe more.

From the Navel to the *Pudenda* S, One Face; but the *Apollo* has Half a Noſe more: and the upper Half of the *Venus de Medices* is to the lower Part of the Belly, and not to the Privy Parts.

From the Genitories or *Pudenda*, to the upper Part of the Knee, called the Thigh W, Two Faces.

The Knee contains Half a Face.

From the lower part of the Knee to the Ancle, call'd the Leg, Two Faces.

From the Ancle or *Malleolus internus* to the Sole of the Foot, Half a Face.

A Man, when his Arms are ſtretched out, is from the Extremity of the Longeſt Finger of his Right Hand to the Extremity of the Longeſt of his Left, as broad as he is long.

From one ſide of the Breaſts to the other below the Paps M M, Two Faces.

The Bone of the Arm call'd *Humerus* is the Length of Two Faces from its Conjunction with the Shoulder-blade to the Elbow. Here we think our Author is miſtaken, for if you allow Two Faces to that Part of the Arm between the Shoulder and bending of the Cubit, and Two more from the Elbow to the Root of the Little Finger, when the Fingers contain Half a Face, and the Diſtance between the Point of the Shoulder, and Pit of the Throat, a Whole Face; you will make Five Faces and Half on each Side or Half Length, which amounts to Eleven Faces in the Whole: But if you add to this what he ſays afterwards, that the Boxes of the Elbows with the *Humerus*, and of the *Humerus* with the Shoulder-blade, bear a Proportion of Half a Face, when the Arms are ſtretched out; then the Whole Diſtance between the Extremities of the Two Middle Fingers, when the Arms are ſo extended, will amount to Eleven Faces and a Half; wherefore we think the Account may ſtand Corrected thus.

From the Pit of the Throat to the Top of the Shoulder or Extremity of the Spine of the *Scapula*, One Face; from thence to the bending of the Cubit or Elbow, one Face and a half; thence again to the Wriſt, One Face and a Noſe. The Hand with the Fingers Extended contain One Face: hence it follows that Four Faces, a Noſe, and Half a Face, is the diſtance between the Throat Pit, and Extremity of the Middle Finger; which upon extenſion of the whole Arm, *&c.* will amount to Five Faces, or rather more than leſs.

The Sole of the Foot, is the Sixth part of the whole Figure, ſays our Author; but the Foot ought not to exceed a Face, and a Noſe in Length.

As for the Breadth of the Limbs, no preciſe Meaſure can be given, becauſe the Meaſures themſelves are not only changeable according to the Quality of the Perſons, but according to the Movement of the Muſcles.

A Man is Two Lengths or Faces from the Point of each Shoulder; that is to ſay, from the Upper Part of the *Sternum* between the *Claviculæ* call'd the Pit of the Throat, to the Extremity of the Spine of the *Scapula*, call'd the Top of the Shoulder, One Length; and ſo on the other Side.

The Breadth of the Hips of a Man is One Length and a Half; that is, from the great *Trochanter* of the Thigh Bone of one Side, to that of the other: The preciſe Places of which Bones are interſected by an Horizontal Line drawn from the *Pubes* to each Side.

K, The *Pomum Adami*, or Protuberant Part of the *Larynx*, which in Men is much larger than in Women.

L, The *Sternum* or *Os Pectoris* appearing under the Skin *&c.* between the Two Pectoral Muſcles.

N, The *Scrobiculus Cordis* commonly call'd the Pit of the Stomach, under the Skin, *&c.* Preciſely in this Place, is the *Cartilago Enſiformis*.

O P, The *Epigaſtrium*.

Q Q, That of the Left Side denotes the *Inguina*; that of the Right, the *Ilia*.

R, The Region of the Navel.

S, The *Penis*.

T T, The Arms.

V V, The Legs.

W W, The Thighs.

X X, The Feet.

Y Y, The Shoulders.

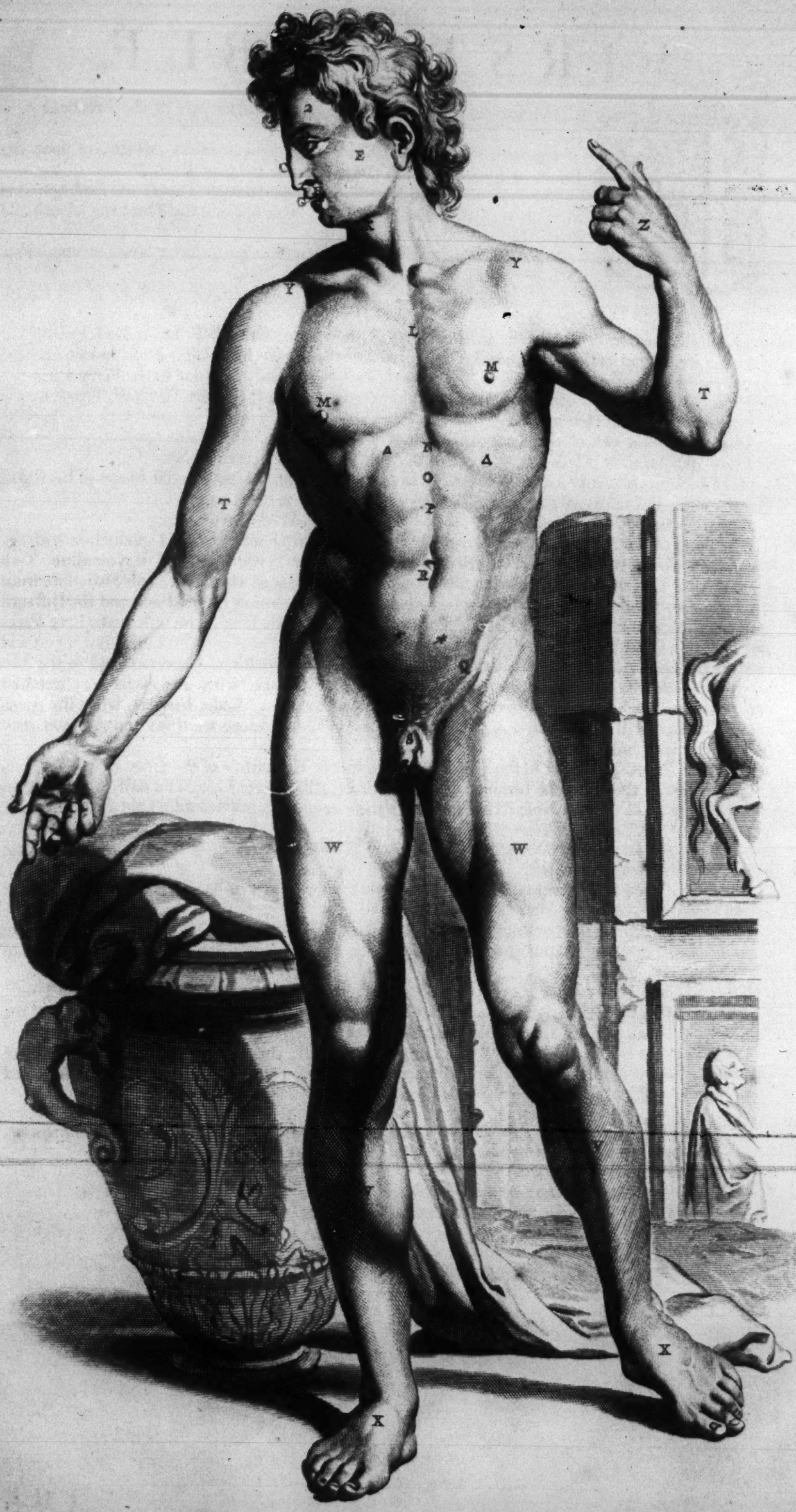
Z Z, The Hands.

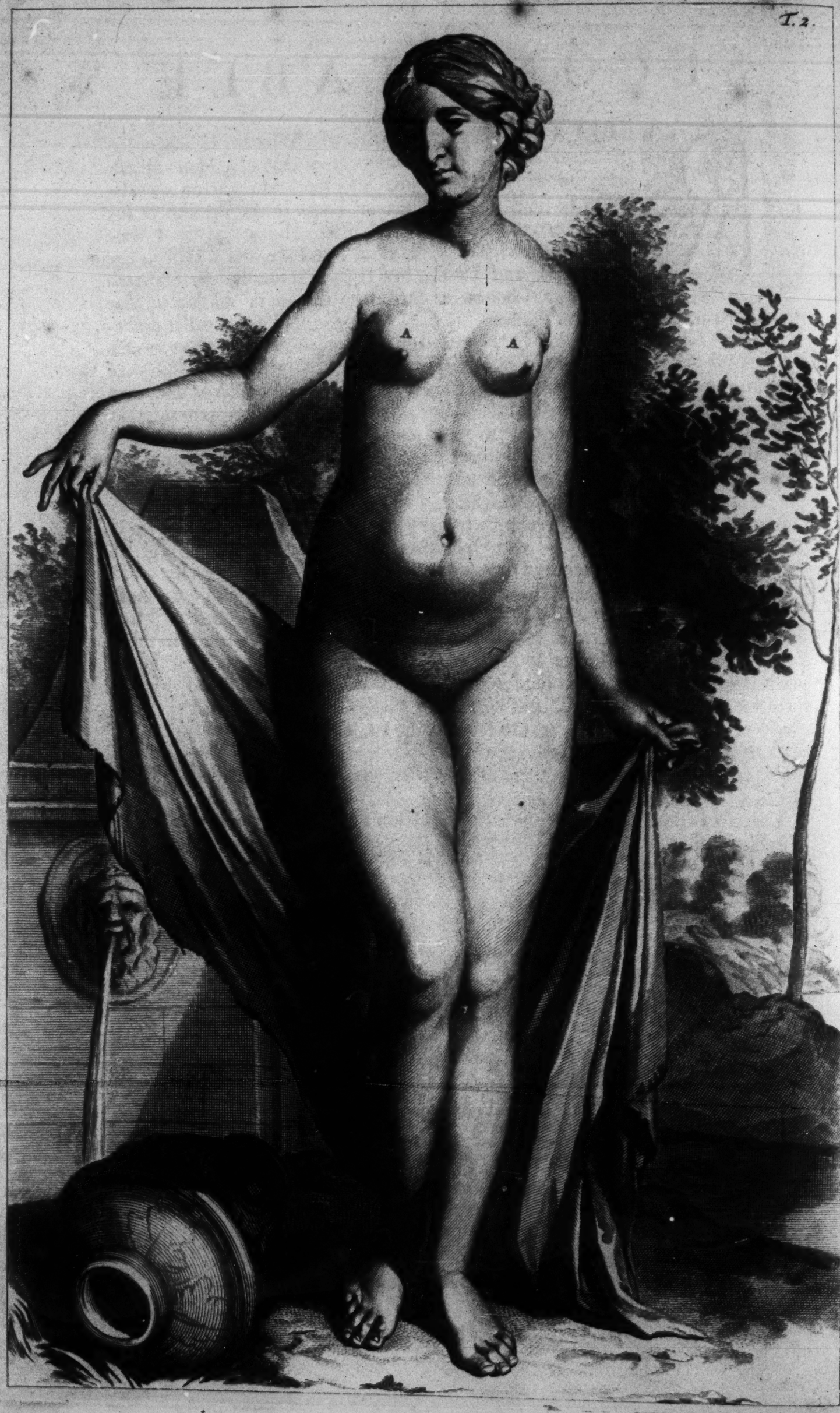
△ △, The *Hypocondrium*.

* *, The *Hypogaſtrium*.

THE

T. 1.





THE
SECOND TABLE

REPRESENTS the Fore-part of a Woman, in whom the *Symmetry* or Proportion differs from that of a Man: Firſt, that moſt remarkably the Shoulders are narrower; the Man having Two Lengths or Faces in the Breadth of his Shoulders, and One and a Half in his Hips; whereas a Woman on the contrary, has but one Face and a Half in her Shoulders, and Two in her Hips: Secondly, the *Claviculæ* or Channel-bones, and Muſcles in general do not appear in Women as in Men; whence it is, the out Line of the one, as *Painters* call it, differs very much from that of the other. Nor will any Action, in which a Woman uſes her utmoſt Strength, occaſion ſuch Swellings or Riſings of the Muſcles and other Parts to appear, as they do in Men; ſince the great Quantity of Fat placed under the Skins of Women ſo cloaths their Muſcles, *&c.* as prevents any ſuch Appearance.

We cannot conceive this one Quantity, and more equal Diſtribution of Fat under the Skins of Women does intirely proceed from any peculiar Qualification, either in their Whole Frame, or intimate Structure of their Parts where it is produced; but by reaſon they lead a more ſedentary Life, and are ſcarce at any time accuſtom'd to hard Labours, whereby their Fatty *Veſiculæ* (expreſt *Tab.* 4. *Fig.* 14. 1, 2, 3.) are compreſt, by the frequent Operations of their Muſcles, ſo as to prevent that more equal Diſtribution, and increaſe of their contain'd Oyl: Yet on the other hand, it muſt be acknowleg'd, that the Legs, and Feet of Women, and even thoſe who walk much, do not afford thoſe Muſcular Appearances like thoſe of Men, which we might expect, were it not that Women did ſuffer very much in thoſe Parts; whether in the time of Impregnation, when the *Uterus* by its Extenſion ſo preſſes the Iliack Veins, as to hinder the Progreſs of the refluent Blood, whence the whole Legs become Swell'd, and frequently *Varices* of their External Veins proceed; or when the *Menſtrua* are Obſtructed, the Legs (thro' a Plenitude of Seroſities in the Veſſels) are incident to ſuffer in like manner in their outward Incloſures, by reaſon of the Unaptneſs of their Poſition to diſcharge their refluent Blood.

The other remarkable Parts, which differ from a Man, and appear Externally in a Woman, are;

A A, The *Mammæ*.

B, The *Pudendum*.

THE THIRD TABLE.

WHAT has been ſaid, in the preceding Table, relating to the Appearance of the External Parts of a Man, or Woman, may indifferently ſerve this Place; wherefore we ſhall proceed to the laſt Part of our Deſign in theſe Animadverſions, *viz.* Of the External Appearance of the Muſcles, and other Parts, in divers Actions. If a ſtrong Perſon is to be repreſented in a vigorous Action, ſuch as *Hercules* &c. after a ſuitable Proportion to ſuch a Figure, and the Action is deſign'd; the next Thing the *Painter*, or *Sculptor* is to conſider, which are thoſe Parts, or Limbs imploy'd in the chiefeſt Force of the Action; and if the Figure is ſtanding, let him be ſure one Leg, and particularly its Foot, be in a Right Line, or Perpendicular to the Trunk, or Bulk of the Body, where the *Center* of its *Gravity* may be plac'd in an *Æquilibrium*: This *Center* is determin'd by the Heel; or if the Figure is on Tiptoe, as it's call'd, then the Ball of the Great Toe is the *Center*; the Muſcles of this Leg, which thus ſupport the Body, ought to be expreſt more in Action, or Swelled in their Bellies, and their Tendons drawn more to an Extenſion, than thoſe of the other Leg, which is plac'd only in Order, to receive the Weight of the Body towards that Way, to which the Action inclines it: As for Example, ſuppoſe *Hercules* was with a Club, or the like, ſtriking at any Thing which ſtood before him towards his Left Side; then let his Right Leg be plac'd ſo as to ſupport the whole Weight of his Body, and the Left looſly touching the Ground only with its Toes. Here the External Muſcles of the Right Leg ought to be expreſt very Strong, or much Tumified; but thoſe of the Left, ſcarcely appearing more than if the whole Figure was in ſome ſedentary Poſture; except, as in the Caſe now mention'd, the Foot being extended, then the Muſcles, which compoſe the Calf of the Leg, are in Action, and appear very Strong; as it is well expreſt in the Right Leg of that excellent Figure of the Ancients, the *Gladiator* in Prince *Borgheſes*'s Palace at *Rome*; of which, we have only a Copy, or Caſt, plac'd by the Canal in St. *James*'s *Park*. When we ſay, the External Muſcles of the Right Leg, or that which ſupports the Weight of the Body, ought to be expreſt very Strong; we don't mean that all thoſe Muſcles ſhould be expreſt equally Swell'd, or in Action; but that thoſe chiefly Concern'd in that Action, or Poſture, that the Leg is then in: As for Example, if the Leg, or *Tibia* is extended, then the extending Muſcles, plac'd on the Thigh, are moſt Swell'd; if it is Bended, then the Bending Muſcles, and their Tendons appear moſt. The like may be obſerv'd of the whole Body in General, when it is in purſuit of ſome vigorous Action; as appears in that Figure of the *Gladiator* laſt mention'd. The *Laocoon* in the *Vatican* Garden at *Rome* alſo furniſhes us with an Example of this Muſcular Appearance thro' the Whole; but in the *Antinous*, *Apollo*, and other Figures alſo of the Ancients, in the *Vatican*, and other Places, in Poſtures where no conſiderable Actions are deſign'd, we ſee their Muſcles expreſt but Faintly, or ſcarcely Appearing; whence we can't but think the *Sculptors* of thoſe Times were very well acquainted with theſe Obſervations. Tho' it be granted, the ancient *Greeks* were accuſtom'd to ſee *Nudities* very Often, nay, almoſt Conſtantly; yet the Difficulty of Copying theſe things from the Life is ſo Great, that unleſs they were well acquainted with ſuch like Remarks, they would fall ſhort of Nature in ſuch Performances; ſince it is well known, even the Life it ſelf, when expos'd to the Artiſt, can't continue thoſe vigorous Actions for any time; but the Muſcles fall, and the Parts looſe their neceſſary Appearance in Action, tho' the Poſture is the ſame. Hence it is, that Limbs, tho' Caſt, or Moulded from the Life it ſelf, are not ſtrictly to be follow'd, unleſs the Life could continue the whole Spirit, or Force of the Action during the time, that the Mould was making from it, which I am apt to think is next to an Impoſſibility; however it might be attempted, at leaſt in ſome particular Parts. Wherefore a rational Theory muſt help us, at leaſt, to ſuch Hints, that when we ſee, we may know what to obſerve, and the Reaſon why it appears ſo in the Life.

This is indeed a very Entertaining Study, which many of our Modern *Painters* and *Sculptors* are leaſt acquainted with.

Thus far, in General, relating to the Muſcles, &c. In the next Place, let us take Notice of ſome particular Appearances of the External Muſcles, and other Parts: Firſt, of the *Muſculi Maſtoidii* (*vid. App. Fig.* 1. 14. 14.) if either of theſe Act, the Head is turn'd to the contrary Side, and the Muſcle, which performs the Action, appears very Plain under the Skin, and is often well expreſt both by *Painters* and *Sculptors*, as is repreſented in the Neck of the Figure of the Firſt Table.

If the Arms are lifted up, the Swelling of the Muſcles, plac'd on the Shoulders, which perform that Action, call'd *Deltoides*, (*App. Fig.* 1. 20.) make the Extremities of the Spines of the Shoulder-blades, (*App. Fig.* 2. 11.) call'd the Tops of the Shoulders, appear Hollow, or Indented.

The Shoulder-blades follow the Elevation of the Arms their *Baſis* (*App. ib.* *l*, *l.*) incline, at that Time, Obliquely Downwards.

If the Arms are drawn Down, put Forwards, or pull'd Backwards; the Shoulder-blades neceſſarily vary their Poſitions accordingly; all which is to be learnt by conſulting the Life only; when being well acquainted with what then appears in the very Action, the Artiſt will be able to comprehend an *Idea*, how to expreſs it: Hence it is, we ſeldom find the Back ſo well expreſt, as the Fore-parts; the Latter not being ſubject to ſuch various Alterations, as the Motions of the Shoulder-blades cauſe in the Former.

When the *Cubit*, or Arm is Bended, the Two-headed Muſcle call'd *Biceps Internus* (*App. Fig.* 22.) has it's Belly very much Rais'd; as appears in the Left Arm of the Figure of the Firſt Table: The like may be obſerv'd of the *Biceps Externus*, call'd *Gemellus*, (*App. Fig.* 2. 17, 17.) when the Arm is extended.

The Right Muſcle of the *Abdomen* (*App. Fig.* 1. 41. 41.) appears very Strong in Riſing from a decumbent Poſture.

Thoſe Parts of the great Saw-Muſcle before, (*App. ib.* 40, 40.) which are receiv'd in the Teeth, or Beginnings of the Oblique Deſcending Muſcle (*ib.* 38, 38.) are very much Swell'd, when the Arm on the ſame Side is thruſt Forwards; that Saw-Muſcle then being in Action in drawing the *Scapula* Forwards alſo.

The long extending Muſcles of the Trunk, plac'd on each Side the Back-bone, (*App. Fig.* 2. **) Act alternately in Walking after this manner; if the Right Leg bears the Weight of the Body, and the Left is in Tranſlation, as on Tiptoe; the laſt mention'd Muſcles of the Back on the Left Side, may be obſerv'd to be Tumified about the Region of the Loyns; and ſo on the other Side.

The *Trocanthers*, or outward, and uppermoſt Heads of the Thigh-bones (*App. Fig.* 2. *r*, *r.*) vary in their Poſitions, in ſuch manner, as no preciſe Obſervations can explain their ſeveral Appearances; but the Study after the Life will ſoon inform the diligent obſerving Artiſt.

If the Thigh is Extended, as when the whole Weight of the Body reſts on that Side, the *Glutæus*, or Buttock-Muſcle, (*App. Fig.* 2. 32, 32.) makes a different Appearance, from what offers at another Time; but if the Thigh is drawn Backwards, that Muſcle appears ſtill more, and more Tumified.

When the whole Leg is drawn Upwards, Forwards, and at the ſame time the Foot inclin'd Inwards, the upper Part of the *Muſculus Sartorius* (*App. Fig.* 1. 44.) appears riſing very ſtrong; in other Poſitions of the Thigh that Muſcle makes a furrowing Appearance in its whole Progreſs, as is expreſt in the Figure of the Firſt Table.

If a Man is on Tiptoe, the extending Muſcles of the Shank, placed on the Forepart of the Thigh (*App. Fig.* 1. 46, 47, 48.) and thoſe of the Foot, which compoſe the Calf of the Leg, (*App. Fig.* 2. 43, 44.) appear very ſtrong, and the *Muſculus Peroneus primus* (*App. Fig.* 1. 55.) makes a conſiderable Indentation, or furrowing at that time in its Progreſs, on the Outſide of the Leg.

Beſides theſe Remarks we could mention many more, which will ſoon be taken Notice of by the obſerving Artiſt in conſulting the Life; to which he ought to apply himſelf, after he is well acquainted with the *Anatomy* of the External Parts; ſee the Firſt, and Second Figures of our *Appendix*.

A B, The Hairy, or Back part of the Head.
C, The Right Temple.
D, The Hair tied up on the *Occiput*.
E, The Neck, where Fontanels are uſually made.
F F, The Shoulders.
G, The Back.
H, The Loins.
I I, The Buttocks.
K K, The Thighs.
L L, The Legs.
M M, The Arms.

THE

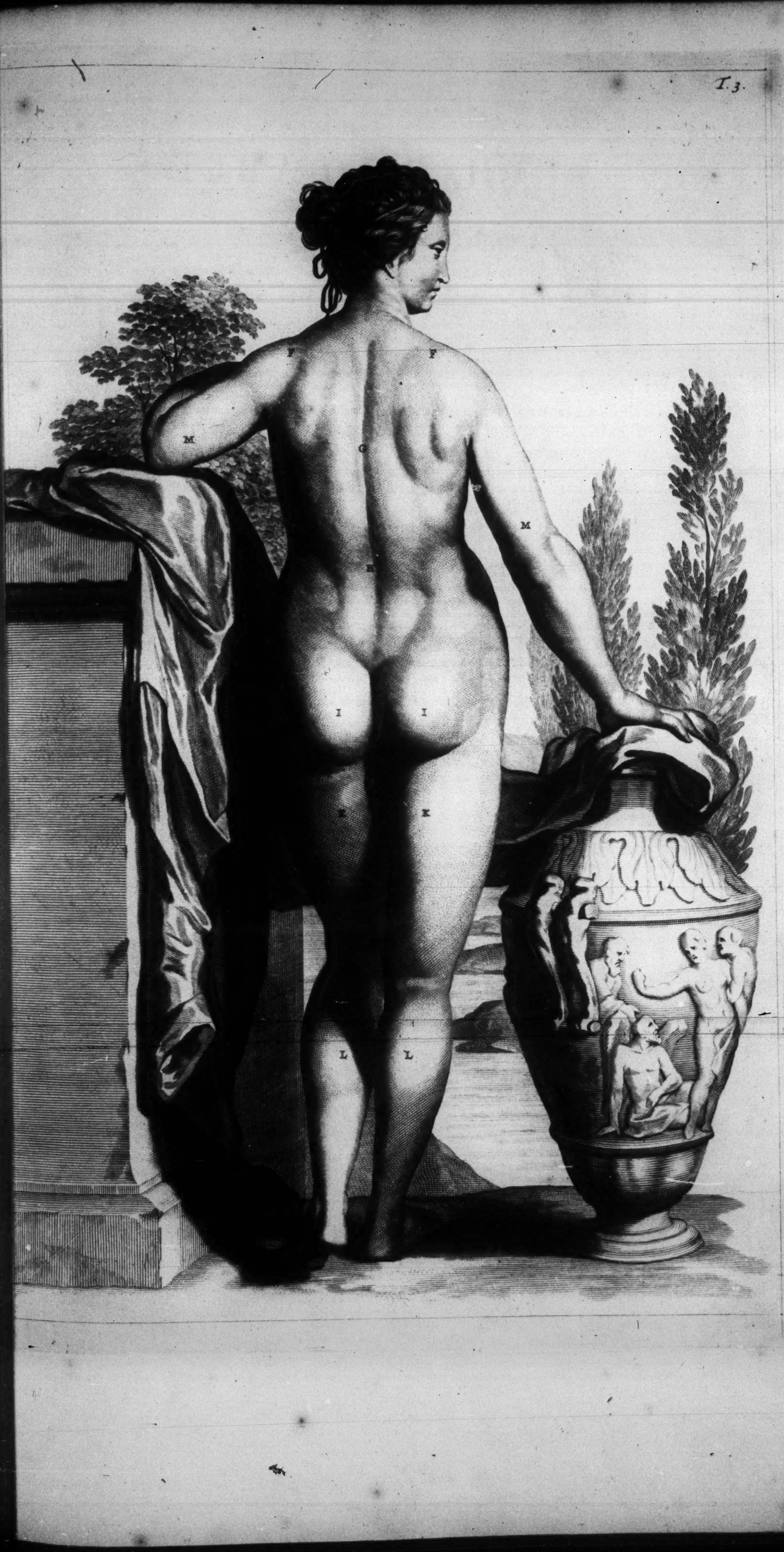

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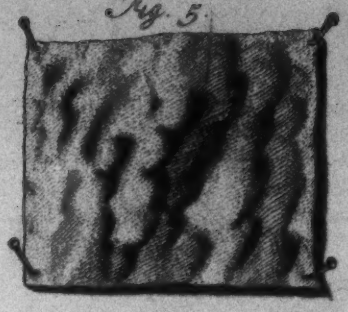
Fig. 5.



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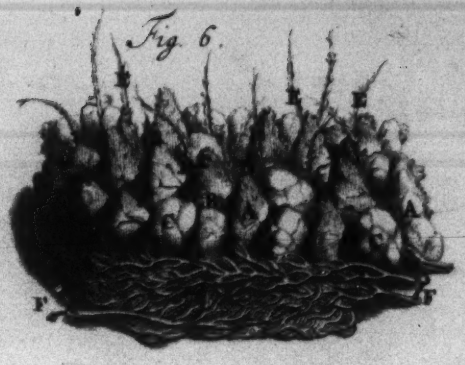
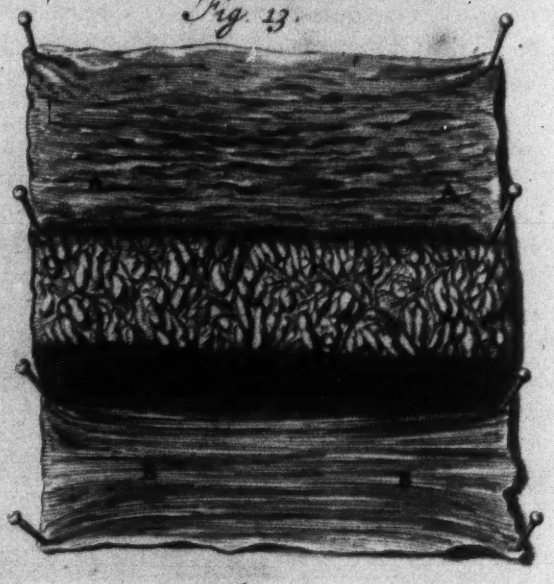


Fig. 15.

Fig. 13.



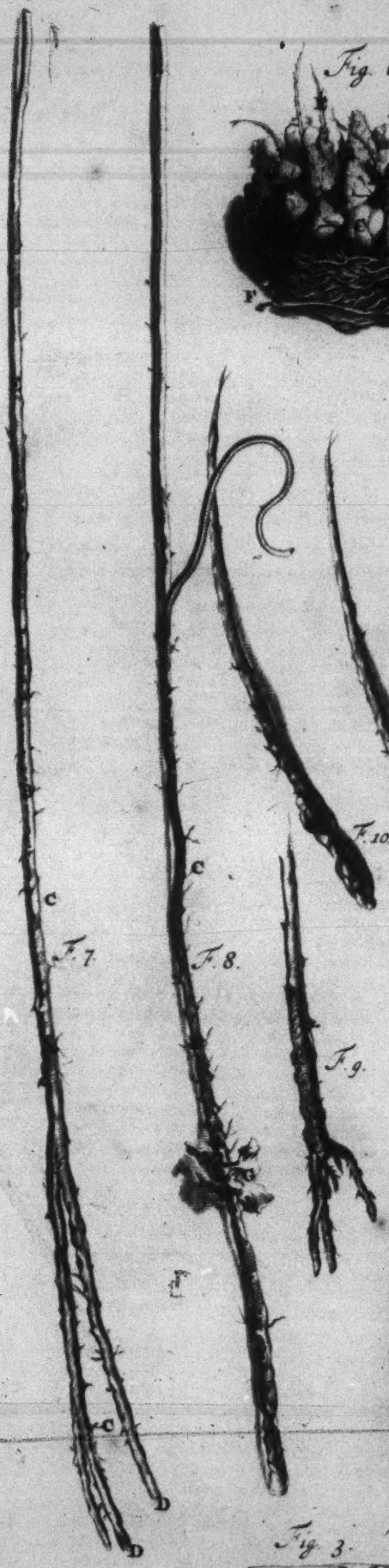


Fig. 14.

Fig. 4.

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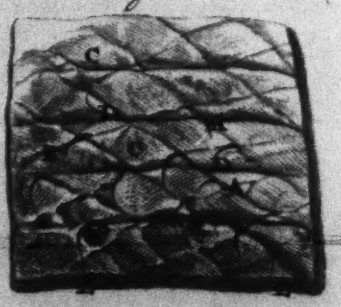


Fig. 3.

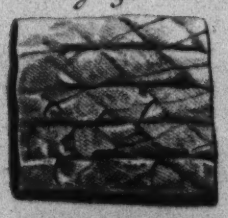
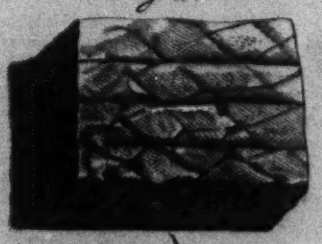


Fig. 2.



THE
FOURTH TABLE.

Fig. 1.

REPRESENTS a Portion of the *Cuticula* or Scarf-skin, rais'd from the Back of the Hand, and viewed with a Microscope.

A A, The Perforations or Pores, whereby the Sweat is discharged.

B B, The Indentures or Furrows.

C C, The Bladder like Protuberances; both these arise from the Inequallity of the Papillary Surface of the Skin it self.

D D, The Hairs which break forth through the *Cuticula*.

E E, The Asperities or Filaments, by which the *Cuticula* is fastned to the True Skin.

With the Assistance of the Microscope, the *Cuticula* appears composed of divers *Strata* or Beds of Scales, fastned to the Papillary Surface of the Skin; and are so intangled with each other, as that they appear a continued Pellicle or Membrane when rais'd from the True Skin, whether by the Application of Blister-Plasters in Living People, or Scalding Water, Hot Irons, or the like, in Dead Bodies: According to the Number of these *Strata* or Beds of Scales, the Skin appears to be more, or less Fair, and the Person is commonly said to have a thicker or thinner Skin; tho' very frequently the Jaundice and other Diseases give it an ill Tincture. The *Cuticula* like the True Skin is not Uniform, in divers Parts of it the Number of its Scales and their *Strata* exceed those of others; on the Lips not above two *Strata* appear; on other parts more, seldom less; in the Bottoms of the Feet of those who walk much, and the Palms of the Hands of Laborious Mechanicks, these *Strata* are not only very numerous, but each Scale is thickned. If you Macerate the *Cuticle* in Water, after some days, its *Strata* of Scales will appear, and you may divide it into Two, sometimes Three, or Four Pellicles; the like Division of it may be also observ'd in *Vesicatories* or Blisters rais'd on Living Persons.

Fig. 2.

A Portion of the *Cuticula* rais'd from the Bottom of the Foot, and view'd with the same Microscope as the former; where its remarkable Thickness appears.

Fig. 3.

A Portion of the *Cuticula* rais'd from the Back; in which the Indentures, Furrows, *&c.* agree with those of Figure the 1st. The Surface of the True Skin of that Part being exactly agreeable with that of the other; but at the Extremities of the Fingers, and Thumbs, the *Cuticle* is variously wreathed and contorted, conformable to the subjacent Papillary Protuberances of the True Skin, as appears in the following Figure.

Fig. 4.

The Upper and Inner Side of the Thumb drawn likewise by the Assistance of the Microscope.

A, From the Point arise

B B, Two Lines, of a Circular Disposition;

C C, Others which form Triangles.

D, Other Lines variously contorted or winding.

The *Cuticle* being remov'd, the *Cutis* or Skin it self appears.

Fig. 5.

A Portion of the Skin of the Arm, as it appears on its External Surface to the naked Eye.

Fig. 6.

The External Surface of the Skin, when view'd with a Microscope; where its Internal Structure or *Rete* of Blood Vessels are also express.

A A, The *Papillæ Pyramidales*; made up of divers Pyramidal Roundish Glands, in whose Composition the Nerves have a considerable Share.

B B, The Capillaments of the little Aqueous Vessels placed between the *Papillæ* according to *Bidloo*. I must confess notwithstanding all the Diligence I could yet use in examining this Part with the Microscope, or otherwise, I have hitherto doubted of the Existence of these Aqueous Vessels, between the *Cuticula* and *Cutis*; in which some have placed the Seat of that Tawny Tincture of the *Ægyptians*, and that Black one of the *Æthiopians*.

C C, The Sudoriferous Glands, which compose the *Papillæ*.

D D, The Sweat Vessels or Excretory-ducts arising from the last mentioned Glands.

E E, The Hairs arising near the Pores of the Sweat Vessels: Besides these Vessels, the Skin is furnished with Arteries, Veins, Nerves, and Lympheducts; the Trunks of the Two former are well express in this Figure F F: Hence it appears the Skin can no more be esteem'd a Similar or Simple Part, than any of those call'd Dissimular or Compounded Parts. Nor is there any Part of the whole Animal Oeconomy, that can be justly esteem'd Simple or not Compounded; even the Blood Vessels, Nerves, and Lympheducts are Compounded Parts, as shall be else where demonstrated. Besides the Pyramidal Sudoriferous Glands, which compose the *Papillæ Cutis*, there are other Sudoriferous Glands placed on the Internal Surface of the Skin; the most considerable of these we find in the *Axillæ*, where they are sometimes call'd *Axillares*, but more properly *Miliares*, from their Figure; the Axillary Glands lying underneath these Sudoriferous ones; they receiving the *Lympha*, brought into them by the Lympheducts springing from the whole Arm, do discharge it again into the Exporting Lympheducts in its Way to the Thoracick Duct. There are other Sudoriferous Glands, tho' not so evident to the naked Eye, under the Skin of the Fingers, *Inguina*, and behind the Ears: The Hairy-scalp, Skin of the Forehead, Palms of the Hands, and Soles of the Feet are also furnished with these Glands; wherefore we shall not distinguish them with the Names of the Places of their Situation, but choose to give them a more general Denomination, either as to their Office, as *Glandulæ Sudoriferæ*, or Figure, as *Miliares*. In the Skin also are placed those Bodies whence the Hairs arise; these, by some are also esteem'd Glands, and call'd *Pilíferæ*: These Piliferous Bodies or Glands, are furnished at their Roots with Importing and Exporting Blood Vessels, Nerves, *&c.* the Hairs being as it were their Excretory Ducts with this Difference from those of other Parts, *viz.* They receiving their separated Juyce immediatly from the Pores in the Extremities of the Blood Vessels; whereas the Hairs, as we conceive, have their Radical Moisture transmitted to them by the Mediation of a Spongious Body which absorbs it from the circumjacent Parts: Hence it is that the Hairs grow in dead Bodies, when the Natural Motions of the Fluids cease. The Hair between the Light, and naked Eye, appears pellucid; but if viewed with a Microscope in that Position, it appears Spongy, or not unlike the Internal Part of a Cane: It seems to be compos'd of horny globular Particles variously joyn'd together, and colour'd, where it hath Plenty of Moisture, it is commonly Pendulous; if more Dry, it is Curl'd.

Fig. 7, 8.

Two of the Hairs of the Head figur'd with a Microscope:

A, Its spongious Body compos'd of horny globular Particles.

B B B, Its straight and transverse Stalks, which joyn its Globules together.

C C C, The woolly or downy Part of the Hair, which descends from above, and stands obliquely downwards; whence it happens, when the Ends of the Hairs are not placed in their right Position, the Hairs are apt to intangle in Combing, as it do's in those Periwigs made of what they call *Combings*.

D D, The Top of the Hair divided:

E, Its Middle Part:

F, Its Root arising from the Piliferous Body, placed within the Skin.

G, A Portion of the *Cuticle*, which commonly sticks to the Hair when extracted.

Fig. 9.

The Branches, which sometimes appear on the Top of the Hair by a Microscope.

Fig. 10, 11, 12.

The different Thickness of the Hairs of divers Parts of the Body, when view'd with the same Microscope. *Figure* the Tenth, that of the Groin; the Eleventh, that of the Nostrils; the Twelfth *Figure* represents the Hairs of the Eyelids.

Immediatly under the Skin is placed the Fat in Humane Bodies; nor is it found in all Parts alike; on the Forehead it is very little, under the Hairy Scalp less, except its Hinder Part, on the Eyelids and *Penis* none, nor on the *Musculus Quadratus Colli*.

Fig. 13.

A Portion of the Fat of the *Abdomen*.

A A, Its External Membrane.

B B, Its Internal Membrane.

C C, The Globules of the Fat with their Blood Vessels passing to them, whence their oyly Contents are deriv'd.

1. The Integument or Covering of the Globules of Fat rais'd.

2. The Globules of Fat themselves.

3. Some of the Globules divided from the rest; in which the Breakings off of their Membranes, and Blood Vessels, are express: Hence it appears, that the Fat is a *Congeries* or Heap of Membranous Cells, which in the Microscope appear distended with Oyl: If the Existence of those *Ductus Adiposi* could be demonstrated, as *Bidloo* intimates at C C in the last describ'd Figure, I should incline to think of another Office of them intended in Nature, than what *Malpighius* has assigned them, *viz.* To convey the oily Contents of the Adipose Cells to some neighbouring Interstices, whether of Muscles, or other Parts, that are on Occasion mov'd, or slide on each other; or into some remarkable Cavity, as into that of the *Abdomen*, &c. where it meets with a Mucilage separated by the Mucilaginous Glands placed in the neighbouring Membranes, and serves to make up a Composition to Lubricate the Parts according to Doctor *Havers's Osteologia Nova*, Pag. 209.

Fig. 14.

The Outside of the last Common Integument of the whole Body, call'd the Common Membrane of the Muscles; some divide this into Two Membranes, and distinguish them by the Names of *Carnosa* and *Communis Musculorum*; which we look on to be altogether needless as may appear by the following Description.

Fig. 15.

The Inside of the Membrane last described: The rise of this Membrane is commonly said to be from the Spines of the *Vertebræ* of the Back, because as I suppose that is the most stable Part to which it's Connected: It is co-extended with the Skin it self, as appears in most Parts, and has its Corresponding *Foramina* for the Eyes, Nostrils, Ears, Mouth, *Anus*, and *Pudendum*: As to its Intimate Structure, I have always met with concurring Experiments and Observations, of its being an Extensible Body, compos'd of divers *Strata* or Membranes, framing Cells, which have divers lesser Cells or *Loculi* within them; and in divers Parts, where the Loosness of the Skin it self would admit, those lesser Cells or *Loculi*, are fill'd with Oil, and are call'd Fat; but in other Parts where either the Hardness of the subjacent Bone, when the Skin is extended, as on the Top of the Skull, or the repeated quick Motions, as of the Eyelids, or the Structure of the Part, as of the *Penis*; these Membranous *Loculi* are not so extended with Oil, as to make an Appearance of Fat; whence it is we find this Membrane much thicker in those Parts last mentioned, than in others; and on the contrary, thinner and fewer *Strata* of *Laminæ*, where its Cells are partly possest with Fat. This Common Membrane is furnished with Vessels of all sorts; nor is it confin'd to the Surface of the Muscles only, but insinuates in their *Interstitia*, and helps to compose their Coverings; whence it happens that by blowing into the divided *Strata* of the Cells of this Membrane, the whole Body of the Animal is Tumified; which is commonly practised by Butchers, especially in dressing their Veal.

The common Integuments of the whole Body being demonstrated, we proceed to those particularly belonging to the Head; nor shall we omit speaking again of these hereafter, where any thing in their particular Parts occurs to our Observation or Memory, which the succeeding Figures may help us to explain.

THE
FIFTH TABLE.

Fig. 1.

AA, *&c.* SHEWS the Internal Part of the Hairy Scalp, as it appears after a croſs Section, and hanging down, when free'd from its ſubjacent Membrane the *Pericranium.* The Thickneſs of the Hairy Scalp is not only owing to the Number of its Piliferous Bodies, and they ſo much larger than thoſe of other Parts, except the Chin, Lips, *&c.* but it is alſo plentifully furniſh'd with Sudoriferous Miliary Glands; both which appear in a Diviſion of the Scalp: Hence ſo many Blood-Veſſels, and they ſo very large, are to be found in this Part; whence ſuch large Fluxes of Blood ariſe in dividing the Scalp in Living Bodies, as is commonly done to apply the Trepan, *&c.*

BB, *&c.* Part of the *Pericranium,* together with the Frontal Muſcle on the Left Side hanging down: The *Pericranium* like the common Membrane of the Muſcles may be divided into divers *Lamellæ,* or Membranes, as is hinted in the Explanation of the preceeding Table: It is plentifully furniſh'd with Blood-Veſſels which chiefly ſpring from the Temporal and Occipital Arteries; but divers of them ariſe from the Arteries of the *Dura Mater,* which paſs thro' the Skull; of which Two remarkable Trunks may be obſerv'd, one on each Side the Longitudinal Suture, between that Part call'd the *Sinciput* and *Occiput,* a little above the *Lamdoidal Suture.*

C, Part of the *Pericranium* cleaving to its Subjacent Membrane the *Perioſtium.*

DDD, The *Perioſtium* rais'd and reclin'd to the Right Side, where the Pores of that Membrane, and of the Skull, for the Tranſit of the Blood-Veſſels, are expreſt: Nor is the *Perioſtium* of this Part truly diſtinct from the *Pericranium,* but ſeems to be a Continuation of its Inferior, or Internal *Lamellæ*; the Diſtribution of the Blood-Veſſels being in common to both, except where they are diſtinguiſh'd by the Temporal Muſcles, under which the *Perioſtium* is plac'd, and the *Pericranium* runs over them.

EE, The *Os Frontis,* and *Bregmatis.*

F, The Upper Part of the Temporal Muſcle diveſted of the *Pericranium.*

G, Part of the Coronal Suture on the Left Side.

H, The Sagital Suture.

I, A ſmall Artery, together with a Branch of a Nerve paſſing out of the Skull to the Frontal Muſcle; in the former an Aneuriſm has happen'd on a ſudden, and a great Laughter, when all Attempts in the Cure thereof prov'd unſucceſful, till with a pointed Actual Cautery the Bone was ſo burnt, as to cauſe an Exfoliation of its External *Lamina;* the concealed bleeding Artery being then not only more expos'd to a Compreſs, but by the Removal of the circumjacent Bone, the neigbouring Blood-Veſſels in its *Meditullium,* were at Liberty to confirm a *Cicatrice.*

Fig. 2.

The Upper Part of the Brain *in Situ,* with its Membranes, the Top of the Skull being remov'd.

A A, The *Dura Mater* covering the Brain on the Right Side.

B B, The Left Hemiſphere of the Brain cover'd with the *Pia Mater* only, where the *Anfractus* of the Brain are elegantly expreſt.

C C, The *Dura Mater* on the Left Side divided, and reclin'd laterally.

D D, A faint Appearance of the Brain thro' the *Dura Mater.*

E, The Blood-Veſſels of the *Dura Mater* lying in its Duplicature.

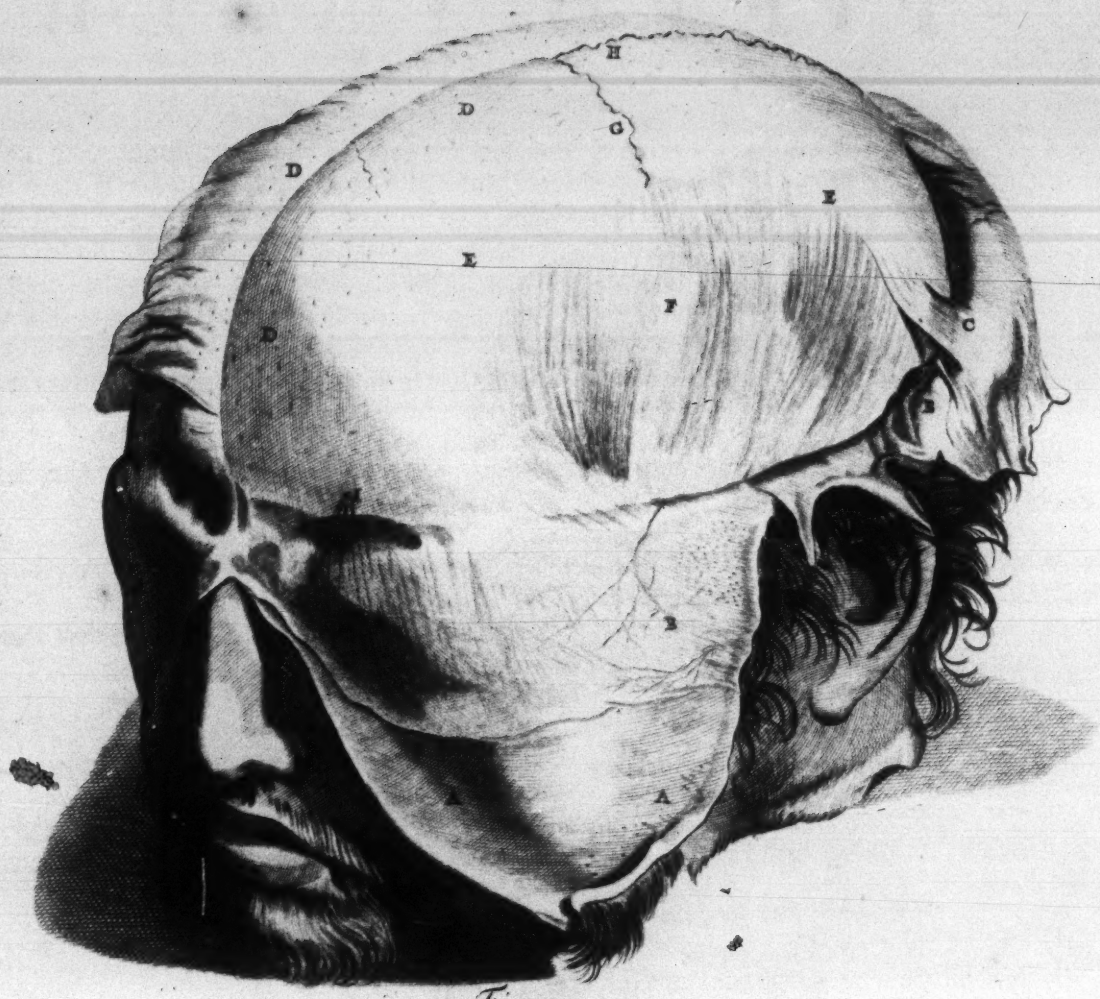
F, That Part of the *Dura Mater,* which was contiguous to the Coronal Suture, where divers Blood-Veſſels paſs from it to the Skull, of which ſome paſs thro' to the Hairy Scalp.

GG, The Veins of the Brain lying in the Duplicature of the *Pia Mater,* before they enter the Longitudinal *Sinus;* here it is they are ſubject to Rupture in Concuſſions of the Brain, and let out their contain'd Blood between the *Dura* and *Pia Mater;* which Caſe I have ſeen more than once, where the *Dura Mater* ought to have been divided, *&c.*

H H, The Edges of the Skull.

THE

Fig. 1



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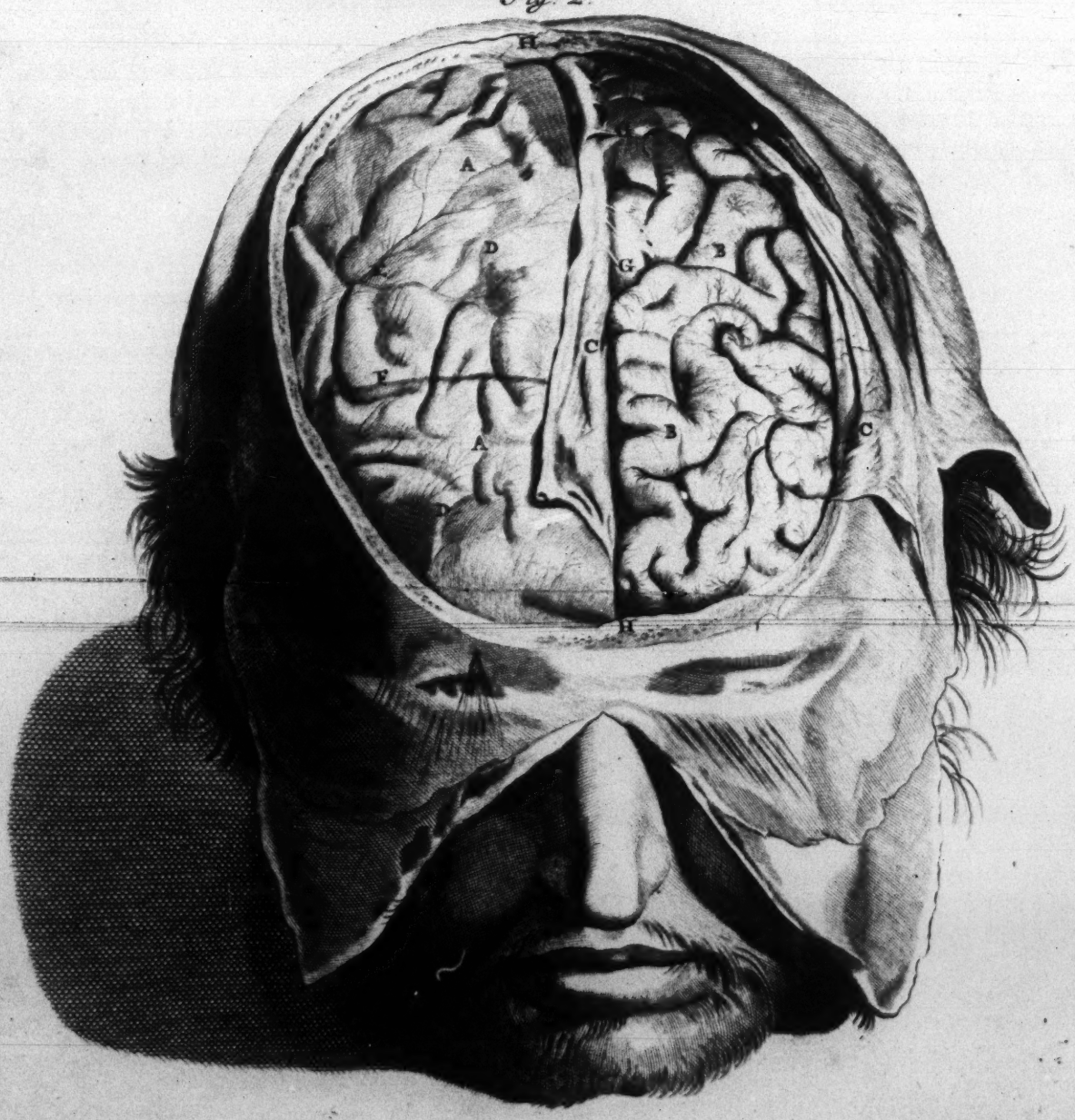

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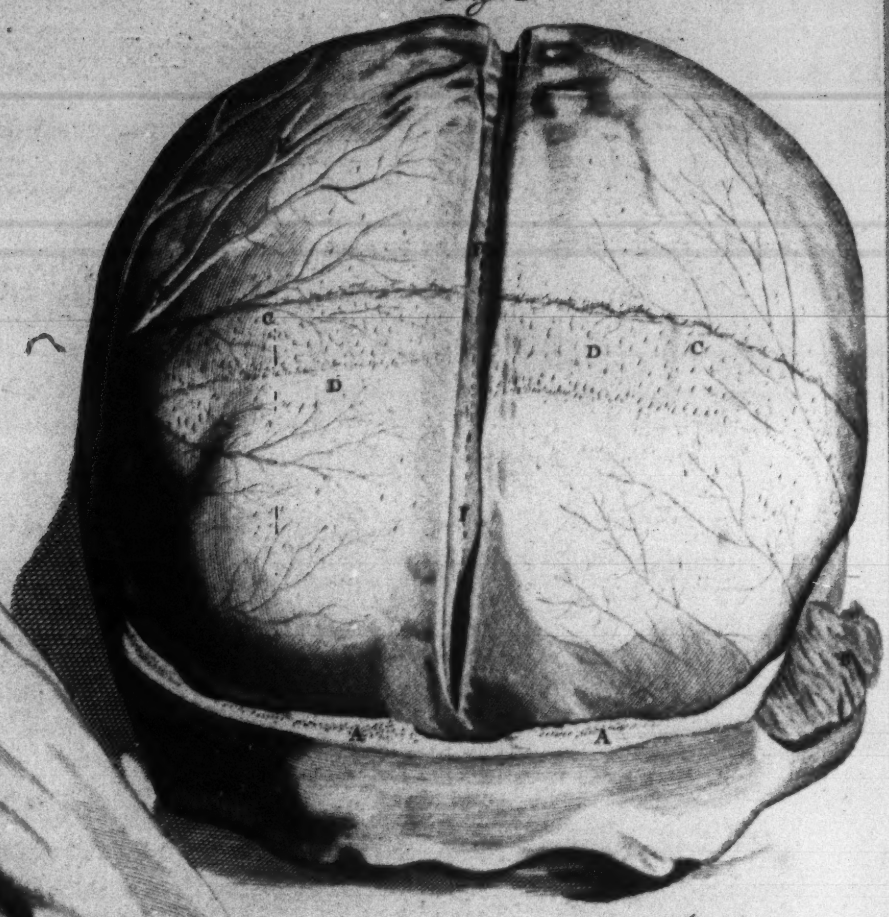

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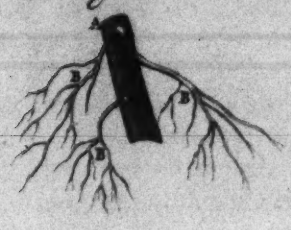
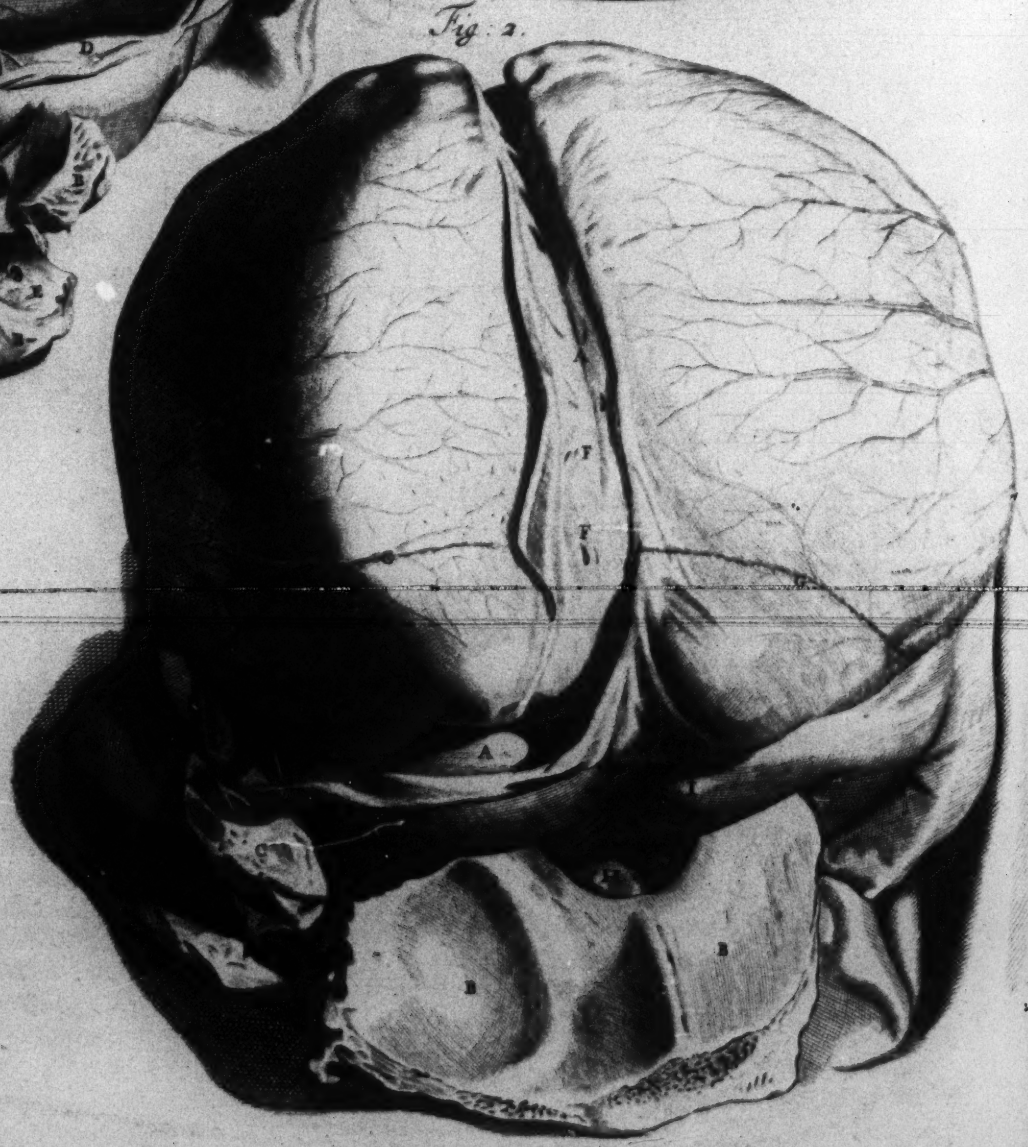


Fig. 4.

Fig. 6.

Fig. 2.



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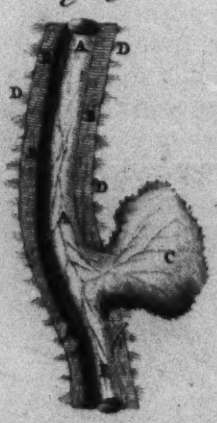


THE SIXTH TABLE.

Fig. 1.

THE Upper Part of the Brain cover'd with the *Dura Mater*, as it appears after the Top of the Skull is taken off.

A A, The Edge of the Forepart of the Skull, whence the Upper Part was divided.

B, Part of the Temporal Muſcle.

C C, The *Dura Mater* covering the whole Brain.

D D, Divers Impreſſions on the *Dura Mater*, which adhered to the Internal Part of the Skull, near the Coronal Suture; where divers Blood-Veſſels paſs between it, and the Hairy Scalp.

E E, The Blood-Veſſels diſtended with Wind.

F F, The Longitudinal *Sinus* opened from near its Beginning at the *Os Criſta Galli*, to its Entrance into the Two Lateral *Sinus's*, as expreſt in the following Figure.

Fig. 2.

A A, The Back Part of the Longitudinal *Sinus* opened, together with the Lateral One on the Left Side.

B B, The *Os Occipitis* broken off and turn'd down.

C, The *Os Petroſum*.

D, The Orifice of the Fourth *Sinus*, call'd *Torcular Herophili*, at the Conjunction of the Two Lateral *Sinus's* with the Longitudinal One.

E, Divers tranſverſe ſtrong Ligaments in the Lateral *Sinus*.

F F, The Orifices of the Veins of the Brain in the Longitudinal *Sinus*.

G G, That Part of the *Dura Mater*, which adhered to the Lamdoidal Suture of the Skull.

H, The *Medulla Oblongata* going out of the great *Foramen* of the Skull, in the *Os Occipitis*.

I, The *Cerebellum* cover'd with the *Dura Mater*.

Fig. 3.

A, Part of the Longitudinal *Sinus* opened.

B B, *&c.* The Veins of the Brain, before they enter the *Sinus*.

C C, Their Orifices opening into the *Sinus* variouſly; ſome of them being parallel to their Trunks; other Veins firſt paſs in the Duplicature of the *Sinus* forwards, and others backwards; by which means the Progreſſive Motion of the Blood is not only aſſiſted in ſome Poſitions of the Head, and its too rapid Motion prevented in others; but a due Mixture and Reunion of its Parts are made, after undergoing ſo elaborate a Strainer, as that of the whole Subſtance of the Brain, eſpecially in its Cortical or Glandulous Part.

Fig. 4.

A A, The Poſterior and Lateral Part of the Brain covered with its *Meninges*.

B B, The *Os Petroſum* broken off from the *Cranium*.

C, Part of the *Os Occipitis* in like manner divided from the Skull.

D, The Inferior and Tortuous Part of the Lateral *Sinus* on the Left Side opened, in which may be obſerved its tranſverſe ſtrong Ligaments, expreſt *Fig.* 2. E.

E, The Cavity in the *Os Petroſum* or *Specus*, which receives the Bulbous Part of the Lateral *Sinus* at the Beginning of the Jugular Vein.

F, The Trunk of the Internal Jugular Vein.

G, A Probe inſerted into the Jugular Vein by the *Sinus*.

H, The Bulbous Part of the Lateral *Sinus*, which was contained in the *Specus* of the *Os Petroſum*.

Fig. 5.

A A, Part of the Lateral *Sinus* cut off.

B B, A lacerated Portion of the *Dura Mater*, which involv'd that *Sinus*, expanded.

C, The Bulbous Part of that *Sinus*, which was contain'd in the *Specus* or Cavity of the *Os Petroſum*; which is a *Diverticulum* to the Refluent Blood, leaſt it ſhould too ſuddenly preſs into the Internal Jugular Vein.

D D D, The Filaments of the *Dura Mater* broken off.

E, The Beginning of the Internal Jugular Vein.

As the Structure of the Veins of this Part differ from that of others; ſo alſo the Arteries of the Brain, have a peculiar Organization at their Entrance from the ordinary Courſe of thoſe of other Parts, as does ſomewhat appear in the following Figure: We have alſo Figured this Diſpoſition of the Trunks of the Carotid Arteries, finding them much more Tortuous, than they are here repreſented. *Vid. App. Fig.* 3. 13, 14.

Fig. 6.

A, The Trunk of the Carotid Artery paſſing towards the Brain.

B C, Part of its Membrane borrowed of the *Dura Mater*, ſeparated and expanded.

D D, The lower Part of the Artery next the Heart.

The Vertebral Arteries alſo enter the Cavity of the Skull very much Contorted, as appears in the Third Figure of our *Appendix*, and again in the Eighth Figure; where II, ſhews their paſſing through the Tranſverſe Proceſs of the firſt *Vertebra* of the Neck; K K, their Trunks marching between the firſt *Vertebra* and *Os Occipitis*, to the great *Foramen* of the laſt named Bone, through which they paſs into the Skull, and afterwards conjunctly make up the Cervical Artery. The Deſign of theſe Curvations in the Arteries, before they enter the Cavity of the Skull, is to prevent too great a Swiftneſs of the Current of the Blood through the whole Subſtance of the Brain, which being placed ſo near the Heart, would alſo ſuffer by its too great Pulſation; were it not that the Contorted Trunks of theſe Arteries leſſened its force; elſe the frequent diſorderly Motions of the Heart, would make us as often incident to ſuffer great Inconveniences in the Brain; yet nevertheleſs we are incident to ſuffer in ſome Degree; whence 'tis that the Paſſions of the Mind, wherein the Heart is affected ſo ſuddenly, diſorders the Reaſon.

THE SEVENTH TABLE.

Fig. 1.

REPRESENTS the Posterior Part of the Brain as it appears lying on the *Basis* of the Skull, its Upper Part being free'd from the *Dura Mater*.

A A, The Hinder Lobes of the Brain raised, and drawn somewhat forwards.

B C, *&c.* The Ligature, and Two Pieces of Wood, made use of for the better supporting the Brain in that Position.

D D, Parts of divers Quadruplicatures of the *Dura Mater*.

E E, A Division of the Second Process of the *Dura Mater* on the Left Side; in which the *Cerebellum* appears.

F F, The *Cerebellum* laid bare in that Division.

G H, The Second Process of the *Dura Mater*, on the Right Side intirely covering the Upper Part of the *Cerebellum*.

I I, The Edge of the *Os Occipitis*, whence the Upper Part of the Skull is divided.

K K, The Common Integuments of the Head turned off.

Fig. 2.

The Inner Face of the *Os Occipitis*, together with the *Cerebellum*, &c.

A A, The *Cerebellum* inclined forwards towards the *Cella Turcica*, so that its Back Part, which rests on the *Os Occipitale*, comes in view.

B B, The Hindmost Part of the *Medulla Oblongata*, in its Passage out of the great *Foramen* of the *Os Occipitis*.

b, The *Processus Vermiformis* of the *Cerebellum*.

C C C, Divers Roots of the Eighth, Ninth and Part of the Tenth Pairs of Nerves.

a a, The Accessory Nerves accompanying those of the Eighth Pair, at their Egress.

D D, *&c.* The *Crassa Meninx*, or *Dura Mater*.

E E, *&c.* Part of the Edge of the Skull.

F F, The Hairy Scalp dissected.

G, Part of the *Pericranium* raised.

H, The Left Ear.

THE

T. 7

Fig. 1.

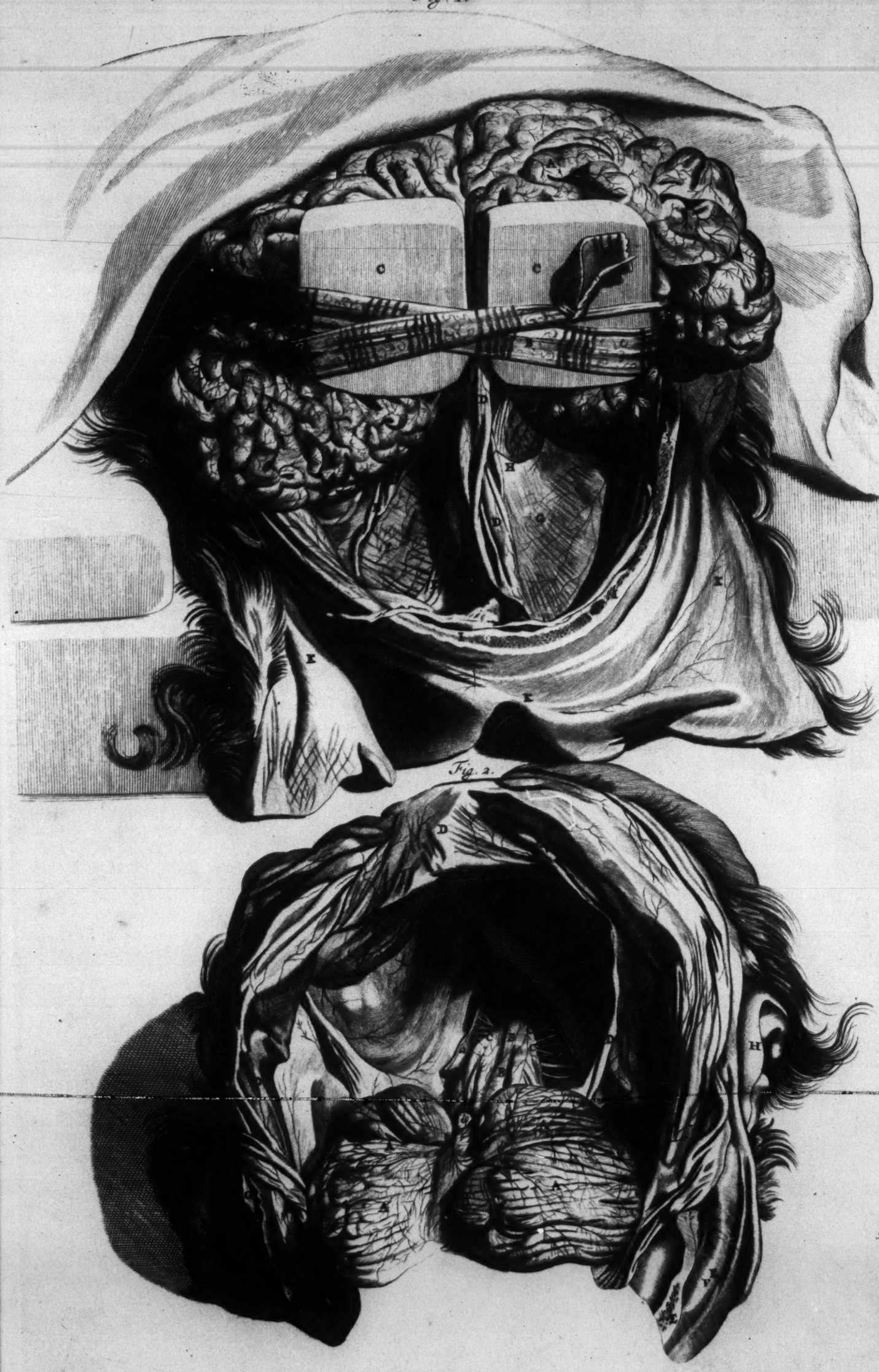
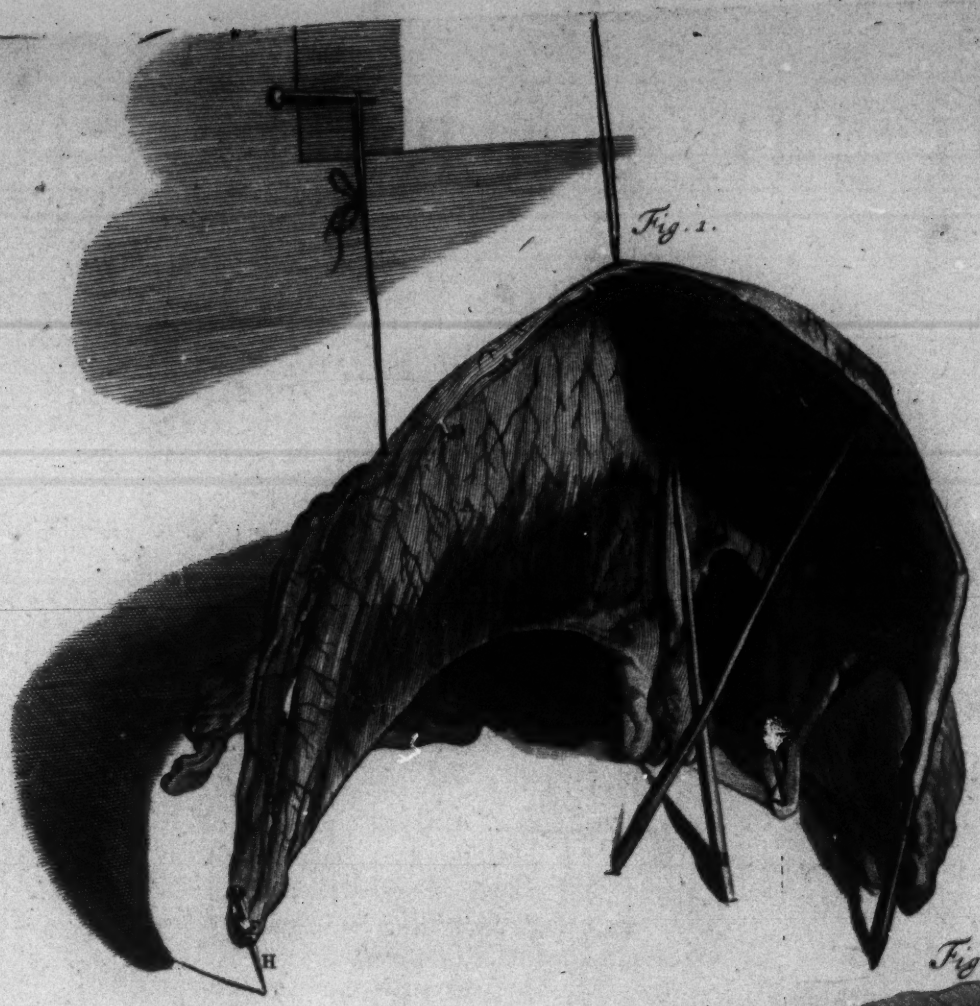


Fig. 2.

Fig. 1.



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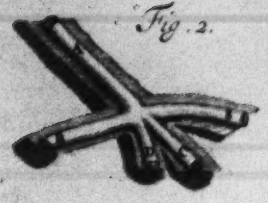
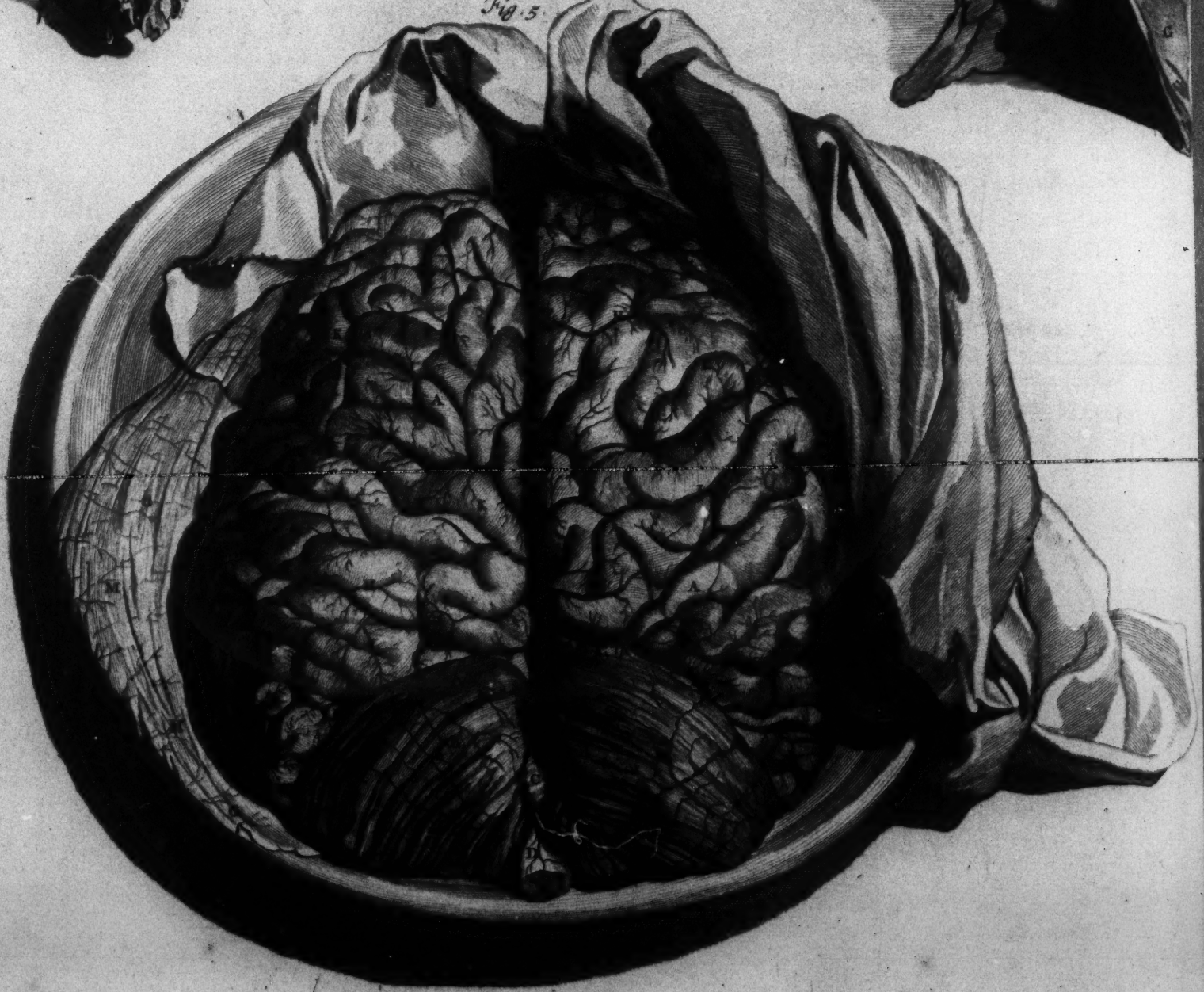


Fig. 3

Fig. 4.

Fig. 5.



THE EIGHTH TABLE.

Fig. 1.

THIS Part of the *Dura Mater*, together with the *Falx*, dri'd.

AA, The *Falx* ſupported, ſo as to ſhew its proper Extent and Figure.

BB, The *Sinus Falcis Superior* or *Longitudinalis*, opened.

C, The *Sinus Falcis Inferior*, not diſtinguiſhed in this Figure.

DD, *&c.* The Orifices of Veins opening into the Longitudinal *Sinus*, and Trunks of other Veins going to it.

E, The Beginning of the Longitudinal *Sinus* at the *Os Criſta Galli.*

FF, The Left Lateral *Sinus.*

GGG, Two Parts of the Quadruplicatures of the *Dura Mater*, lying between the *Cerebrum* and *Cerebellum.*

HH, *&c.* The Sticks, Thread, and Pins made uſe of, to ſupport the Membrane in drying it.

Fig. 2.

Parts of the above mentioned *Sinus* diſtended with Wind and dried, together with Part of the *Dura Mater.*

A, The Longitudinal *Sinus.*

BB, The Two Lateral *Sinus's.*

C, The Fourth *Sinus.*

D, A large Vein, which empties its Blood at the Conjunction of the Four *Sinus's*; which Union of the *Sinus's*, is called *Torcular Herophili.*

Fig. 3.

The Connection or Beginning of the *Falx*, at the *Os Criſta Galli.*

A, The *Os Cribroſum.*

B, The *Criſta Galli.*

C, A Portion of the *Falx* cleaving to the *Criſta Galli.*

Fig. 4.

Part of the *Falx* dried, and expreſt ſomewhat bigger than the Life.

A, The Forepart of the *Falx*;

B, Its Hindpart.

C, That Part of the *Falx* where the Fifth *Sinus* paſſes, called *Sinus Falcis Inferior.* To this lower part of the *Falx* the *Pia Mater* firmly adheres, where divers Veins paſs into its Lower *Sinus* as well as its Upper one; which together with divers Adnaſcences the *Falx* has with the two Hemiſpheres of the Brain, (as may be ſeen by freeing it from them) the Brain is kept ſuſpended, leaſt its Superiour Part ſhould preſs too much on its Inferiour; which Office cannot be aſcribed either to the Internal Part of the Brain, called *Fornix*, as the former and ſome later Anatomiſts pretend, or to the *Corpus Calloſum*, as *Vieuſſenius* will have it: A further uſe of the *Falx* is by its Extenſion between the Two Hemiſpheres of the Brain, to prevent the Superincumbence of the one upon the other, when we lie on either Side; and by its Connection with the *Os Criſta Galli*, and Continuation of it to the Superior Part of the *Dura Mater*, and its Second Proceſſes, lying between the *Cerebrum*, and *Cerebellum*, the whole Brain is kept ſuſpended, and eſpecially its Hinder Lobes, from preſſing on the *Cerebellum.*

DD, Divers Veins of the Brain before they enter the Longitudinal *Sinus.*

E, The Cavity of the Longitudinal *Sinus* as it appears after a Tranſverſe Section of it.

FF, Part of the *Dura Mater* which covered the Left Hemiſphere of the Brain.

GG, The Superiour and External Surface of the *Dura Mater* on the Longitudinal *Sinus.*

Fig. 5.

The Two Hemiſpheres or Upper Part of the Brain, together with the *Cerebellum*, as they appear when the whole Brain is taken out of the Skull, and laid on its *Baſis.*

AA, The Two Hemiſpheres of the Brain.

BB, The *Cerebellum* covered with the *Dura Mater.*

C, The *Proceſſus Vermiformis.*

D, A Portion of the *Medulla Oblongata* cut off.

EF, The Forepart of the Diviſion of the Two Hemiſpheres of the Brain, in which the *Falx* is inſerted.

GG, The Middle Membrane of the Brain according to *Bidloo*, ſeparated and turned to one ſide, which we take to be the External Membrane or *Lamina* of the *Pia Mater.* That the *Pia Mater* is compoſed of divers *Strata* of Membranes, not unlike the *Peritonæum*, does not only appear in an *Hydrocephalus* or Hydropical Brain; but in ordinary Diſſections we find it Double, eſpecially about the *Medulla Oblongata*, *Proceſſus Annularis*, &c.

In Wounds of the *Pia Mater*, and Brain, we meet with very great *Fungus's*, even to the Size of a Tenis Ball above the Surface of the *Dura Mater*, and Skull; which may be taken off by Inciſion without a dangerous Flux of Blood: An Inſtance of which we have had more than once an Opportunity of obſerving; and notwithſtanding theſe Excreſcences have been frequently removed, yet they have grown again, and the Patient has Languiſhed, and died. *Vid. Diemerbroeck*, *Anatom.* Lib. III. Cap. V.

IIII, The *Pia Mater* remaining on the Brain.

KKL, The External Surface of the Brain compoſed of divers turnings and windings of its Cortical Part.

MM, The Retiform Diſtribution of the Blood Veſſels between the External and Internal *Lamina* of the *Pia Mater*; the largeſt of theſe Veſſels on the Superior and External Part of the Brain, are Veins which diſcharge their Blood into the Longitudinal *Sinus*, from whence they are here cut off.

THE NINTH TABLE.

Fig. 1.

THE whole Brain taken out of the Skull, free'd from the *Dura Mater*, and lay'd on its Hemiſpheres, its *Baſis* being uppermoſt. In this Figure many things are unobſerv'd, and others very ill expreſt, wherefore we ſhall add a Figure of the Brain in this Poſition, more correctly drawn after the Life. *Vid. Appendix.*

A A, *&c.* The *Baſis* of the Brain;

B B, *&c.* Its Diviſion into Four Lobes;

C C, The Foremoſt Lobes,

D D, The Hindmoſt Lobes of the Brain.

E, The *Infundibulum*, very ill expreſt.

F F, The Two white Protuberances behind the *Infundibulum*, not well expreſt.

G G G, The Annular Proceſs, or *Pons Varolii*, and Beginning of the *Medulla Oblongata*.

H, The *Medulla Oblongata* cut off near its Egreſs at the great *Foramen* of the *Os Occipitis*.

I I, Part of the *Pia Mater*, where it is apparently Double between the Annular Protuberance, and *Medulla Oblongata*.

K K L L, } The *Cerebellum* cover'd with the
O O, } *Pia Mater*.

M, A Section in the *Cerebellum*.

N, The Arboreſcent Diſtribution of Blood Veſſels within the *Cerebellum*.

P P Superior, The Trunks of the Carotid Arteries injected with Wax, and cut off.

P P Inferior, The Cervical Artery in like manner injected with Wax.

NB. That the Two Semicircular Branches, which join theſe Two laſt mentioned Arteries together, call'd the Communicant Branches, are expreſt too large in this Figure, or elſe the Subject, from whence it was taken, differed very much from the ordinary Courſe of Nature; neither of which are mentioned by *Bidloo*.

Q R S, The Olfactory Nerves.

T T, The Optick Nerves;

V, Their Conjunction;

W W, Their Trunks cut off at their Egreſs from within the Skull.

X X, The Third Pair of Nerves, call'd *Oculorum Motorii*.

Y Y, The Upper and Forepart of the *Proceſſus Annularis*.

Z Z, *Par Patheticum*, or the Fourth Pair of Nerves.

a a, The Fifth Pair of Nerves.

b b, The Sixth Pair of Nerves.

NB. The Seventh Pair of Nerves are not here expreſt, tho' *Bidloo* pretends to deſcribe them at c c d e.

c c, d, e, f, g, Confuſed Deſcriptions of ſeveral Pairs of Nerves erroneouſly multiply'd into divers Pairs by *Bidloo*.

h h, The Spinal Acceſſory Nerves.

** The Beginnings of the Ninth Pair of Nerves.

i i, k k, The Tenth Pair of Nerves, or the Firſt of the Neck.

Fig. 2.

Part of the Brain on the *Baſis* of the Skull.

A A, The Forepart of the Brain.

B, The Fingers which ſupport it, ſo that the following Parts come in view.

C, The *Infundibulum*.

D, The *Glandula Pituitaria* lying within the *Cella Turcica*.

E, The Membranous Connection of the *Infundibulum* to the *Glandula Pituitaria*.

F, A Blood Veſſel paſſing thro' the Lateral Part of the *Os Cuneiforme*, which *Bidloo* has groſly miſtaken for the Olfactory Nerves.

G G G, Portions of the Optick Nerves ſo divided, that Parts of them remain on the *Baſis* of the Skull, as well as on the Brain it ſelf.

H H, The Third Pair of Nerves, call'd *Motorii Oculi, in ſitu*.

I I, The Internal Part of the *Baſis* of the Skull.

K K, The *Dura Mater*.

Fig. 3.

The Internal Part of the *Baſis* of the Skull, after the Brain is taken out, and Portions of the Ten Pair of Nerves of the Brain remaining at their Egreſs, together with Part of the *Dura Mater*.

A A, *&c.* The Edges of the divided Skull in which the *Duploi* may be ſeen.

B B, The *Os Criſta Galli*.

C C, The *Os Cribriforme* on both Sides.

D D, *&c.* Part of the *Dura Mater* cleaving to the *Baſis* of the Skull.

E E, The *Os Occipitale* bared from the *Dura Mater*.

F F, Portions of the Olfactory Nerves cut off, near their Egreſs at the *Os Cribriforme*.

G G, The Optick Nerves in like manner cut off, before they paſs the Firſt *Foramina* of the *Os Sphenoides*.

g g, The Carotid Arteries alſo divided.

H H, The Third Pair of Nerves cut off.

I I, The Pituitary Gland within the *Cella Turcica*, lying under the *Dura Mater*.

K, The *Infundibulum*.

L L, The Fourth Pair of Nerves, or *Par Patheticum* going out of the Skull, with the Third and Sixth Pair of Nerves.

M M, The Fifth Pair of Nerves.

N N, The Sixth Pair of Nerves running under, or in the Duplicature of the *Dura Mater*, at a conſiderable Diſtance before they march out of the Skull at the Two Second Perforations of the *Os Sphenoides*. *Vid. Tab.* 89. *Fig.* 2. C. D. I.

O O, The Seventh, or Auditory Nerves paſſing out at the *Oſſa Petroſa*.

NB. That O on the Right Side ſhould have been placed a quarter of an Inch below the M on the ſame Side.

P, The Eighth Pair of Nerves, or *Par Vagum* going out at the Second Perforations of the *Os Occipitis*, with the Lateral *Sinus's*, which lead to the Internal Jugular Veins.

Q Q, The Spinal Acceſſory Nerves paſſing out of the Skull with the *Par Vagum*.

R R, The Ninth Pair of Nerves paſſing thro' the Third Perforations of the Occipital-bone.

T, The Firſt and great *Foramen* of the *Os Occipitis*, by which the Spinal Marrow paſſes out of the Skull to the *Specus* of the *Vertebræ* of the Back.

The *Sinus's* of the *Dura Mater*, which appear where it cleaves to the Internal Part of the *Baſis* of the Skull, are expreſt in a Figure of our *Appendix*; where the Egreſs of the Ten Pair of Nerves of the Brain are alſo repreſented, together with the moſt conſiderable Blood-Veſſels, which come in, and go out from the Cavity of the Skull.

THE

T. 9.

Fig. 3.

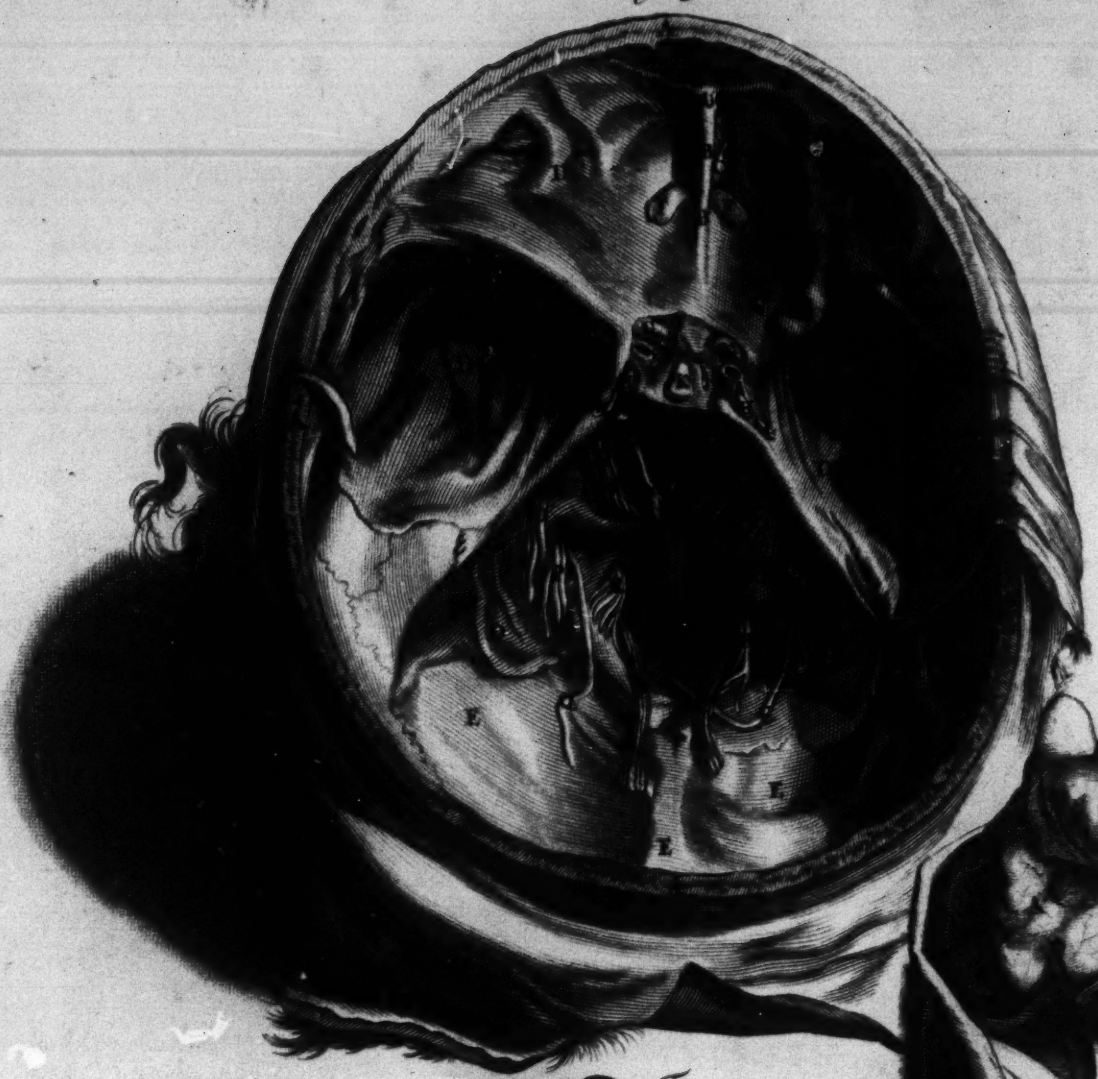


Fig. 2.

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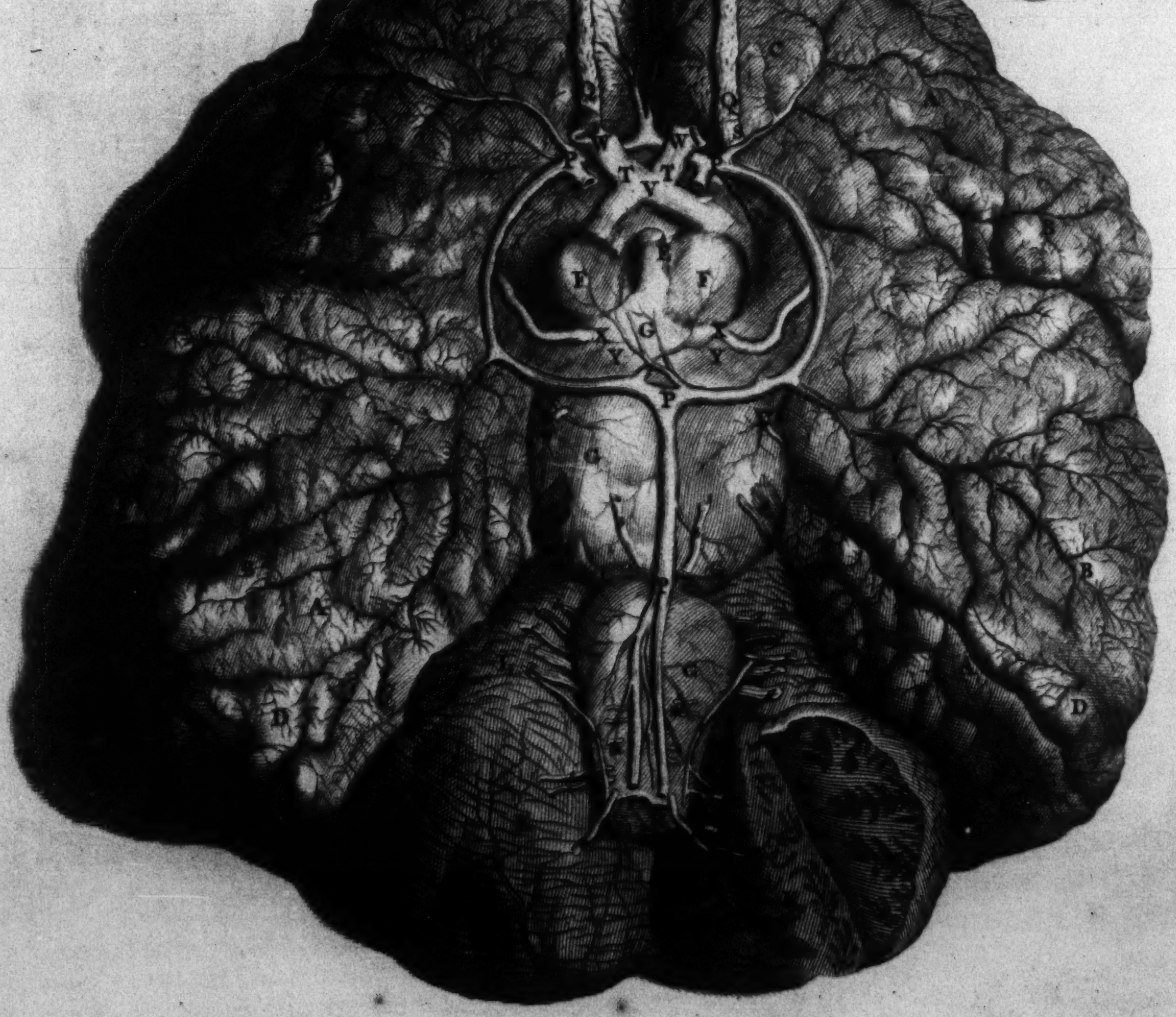

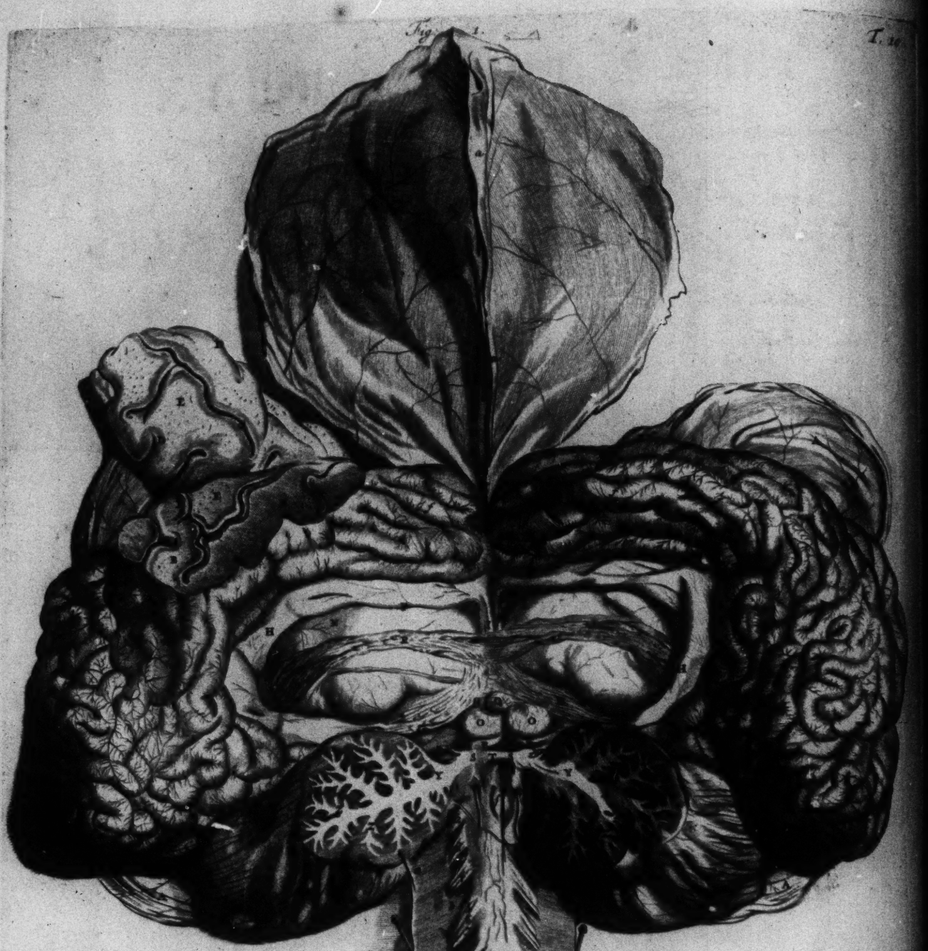

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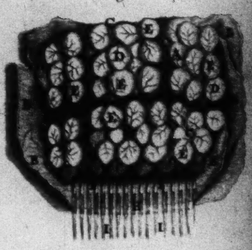
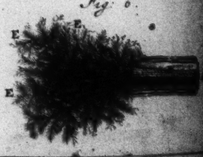


Fig: 3.

Fig: 6.



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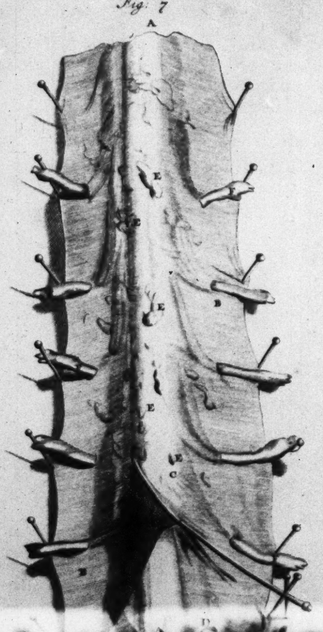

Fig: 5.

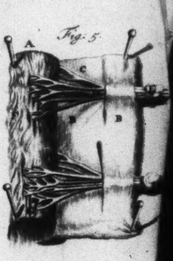

Fig: 8.

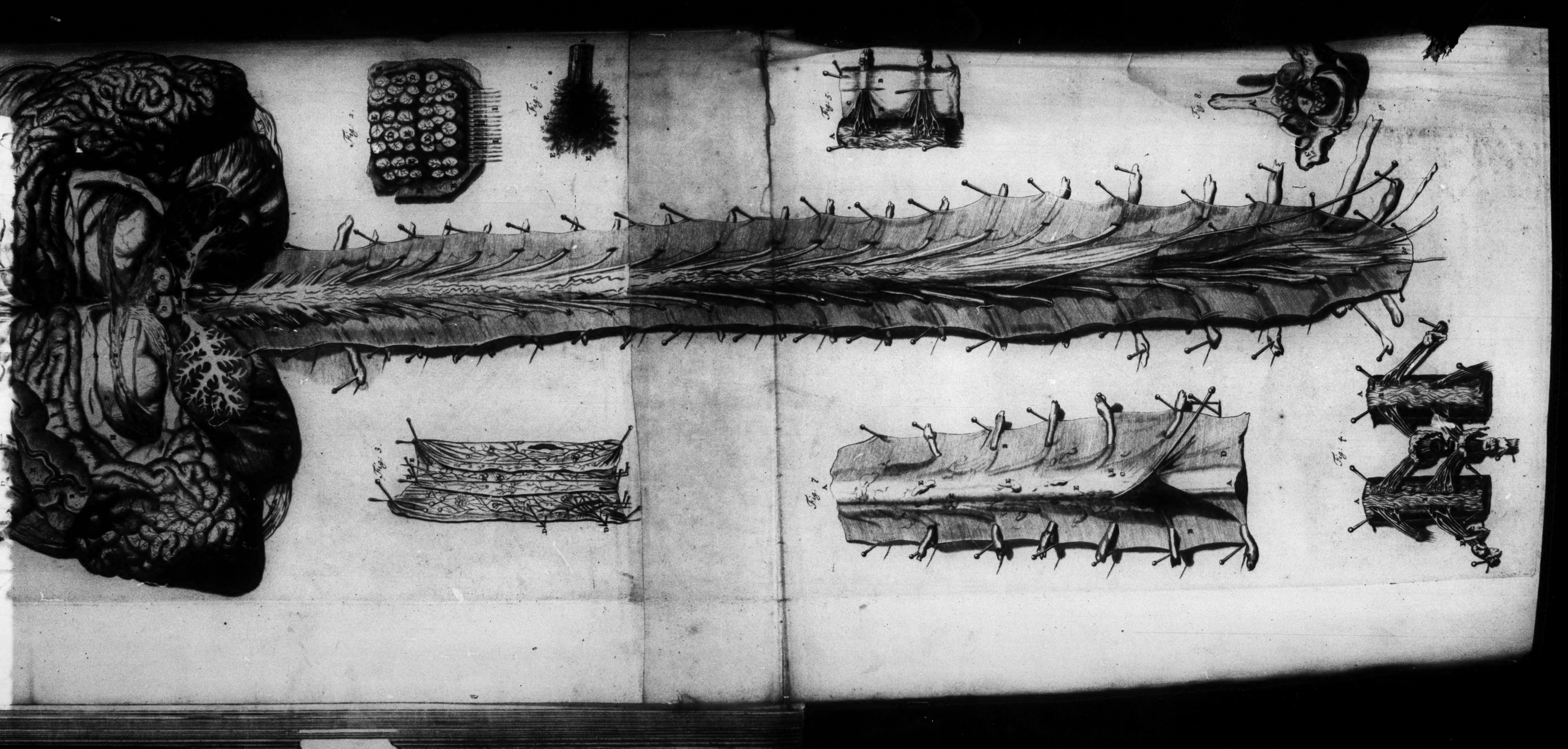
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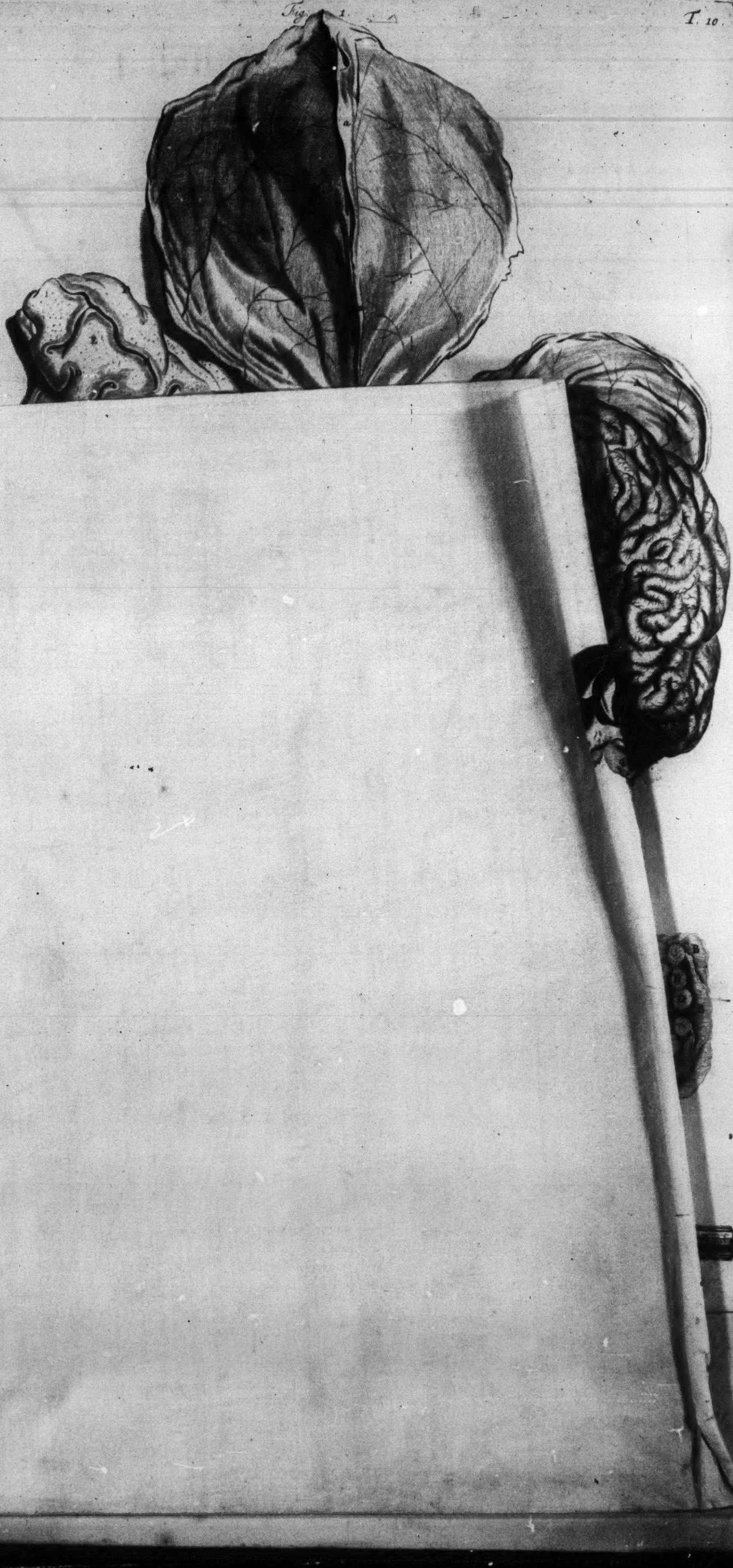
Fig. 6.
Fig. 8.

Fig. 1.

T. 10.



THE TENTH TABLE.

Fig. 1.

THE Brain together with the *Medulla Oblongata* continu'd to it, when free'd from the Skull, and *Specus* or Cavity of all the *Vertebræ* of the Neck, Back, and Loins.

A A, The *Dura Mater* free'd from the Brain, and somewhat expanded.

a a, Part of the *Falx*.

B B, Part of the Brain cut Transversly.

C, The Division in its Cortical Part, which compose those turnings, and windings on its External Surface.

D D, The Cortical, or Cinericious Part of the Brain; by some call'd the Glandulous Part.

E E, The Medullary, or white Part of the Brain; by some call'd the Callous, and Fibrous Part.

f f, The Hindmost Part of the Brain, which rested on the Second Process of the *Dura Mater*.

F G H, The Right and Left Ventricles of the Brain open'd; where the Blood Vessels of the *Pia Mater*, which Line them, may be seen: F, their Upper and Foreparts, which are largest, and become still less, and less towards their Lower, and Back-parts, G.

H H, The *Corpus Callosum*.

I K, The Roots of the *Fornix*.

L, The *Thalamus Nervi Optici* of the Right Side; that of the Left, not being Lettet'd.

M, The *Corpus Transversale* of the *Corpus Callosum*.

N N, Parts of the *Corpora Striata* whole.

O O, The *Nates*.

P P, The *Testes*.

Q, The *Glandula Pinealis, in situ*.

R R, The *Plexus Coroeides* compos'd of Blood Vessels of both Kinds, Lymphe-ducts, Membranes, and Glands. See *Fig.* 3.

S S, The First Process of the *Cerebellum*, going to the *Nates*.

T, A Transverse Process joyning the Two Pathetick Nerves, and last mentioned Process.

f, The Fourth Ventricle, call'd *Calamus Scriptorius*.

V V, The Pathetick Nerves.

W W, Two Processes of the Spinal Marrow which compose the Sides of the Fourth Ventricle.

X Y Z, The *Meditullium* of the *Cerebellum* appearing in an Arboreous Manner, after a Transverse Section of the *Cerebellum*.

a b, a b, &c. The *Dura Mater*, which incloses the Spinall Marrow, divided, and expanded.

c c, &c. The *Pia Mater* as yet incloſing the *Medulla Spinalis*, but raised with a Probe in its Lower Part, where it inverts the *Cauda Equina*.

1 2 3, &c. The several Pairs of Nerves springing from the *Medulla Spinalis*: From 1 to 9 the Origins of the Nerves of the Neck; the First of which passes out at the Third Perforation of the *Os Occipitis*, and is reckoned the Tenth of the Brain; the rest march out between the *Vertebræ* of the Neck, Back, Loins, and Perforations of the *Os Sacrum* successively; that of *Fig.* 9 marching out between the Sixth and Seventh *Vertebra* of the Neck; those of 10 to 21 are the Nerves of the Back: From 22 to 27 those of the Loins; the rest go out at the *Foramina* of the *Os Sacrum*.

Fig. 2.

A A, Part of the Brain boyl'd, and view'd with a Microscope.

B B, The Membranes of the Brain separated; of which the External is the *Dura Mater*; the Two Internal compose the *Pia Mater*.

C D, The Reticular Distribution of the Blood Vessels near their Extremities.

E E, Divers Orders of Cortical Glands on the Surface of the Brain.

F F, The Tubes deriv'd from those Cortical Glands.

G G, The Lobes, or distinct Clusters of Glands wreathed with various Angles.

H H, The Complicated Tubes.

I I, The Nervous Fibres deriv'd from the last mentioned Tubes.

Fig. 3.

Part of the *Plexus Coroeides* delineated, by the help of a Magnifying Glass.

A A, The Membranous inclosures of the *Fasciculi* of the Vessels, separated.

B C, The Blood Vessels extended with Plaister of *Paris*, and their own Blood.

D D, Branches of Lymphe-ducts, somewhat extended with Wind.

E, Nervous *Tubuli* according to *Bidloo*, which I can by no means conceive to be existent in the *Plexus Coroeides*.

F F, The Glands of the *Plexus Coroeides* placed irregular, of which, some are Hard, and Fibrous, others are Vesiculous, and Flaccid.

Fig. 4.

A Portion of the *Medulla Oblongata* cut off, and divided laterally according to its Length; expresst somwhat bigger than the Life.

A A, The Upper Part of the *Medulla Oblongata*.

B B, The Fore and Back Part.

C C, The Nervous *Fibrillæ* arising from the Fore, and Back Part of the Spinal Marrow.

D D, The Inferior Part of the Spinal Marrow cut off.

E E, Portions of the *Dura Mater* left, to shew its Perforations for the Nerves, as they pass out of the *Specus* of the *Vertebræ*.

F F F, The *Plexus Gangliformes* of the Nerves at their Egress from between the *Vertebræ*: Two or Three of the Bodies of the Nerves themselves are expresst in this Figure pinn'd out.

Fig. 5.

A Portion of the *Medulla Spinalis*, cut off about the Third *Vertebra* of the Back, expresst somewhat bigger than the Life.

A, The Upper Part of the Spinal Marrow.

B B, A Portion of the Continuation of the *Dura Mater* expanded.

C C, The Nervous Fibres arising from the Fore and Back Parts of the Spinal Marrow.

D, The Nervous *Fibrillæ* collectively passing thro' the *Dura Mater*.

E, Their Gangliform *Plexus* at the Beginnings of the Bodies of the Nerves.

F, A Division of the Spinal Marrow according to its Length.

G, Some *Vestigia* of Bloud Vessels, which pass on the Outside of the Spinal Marrow.

Fig. 6.

The Structure of a Nerve expresst by the Assistance of a Microscope.

A, The Branch of a Nerve dissected from the Neck.

B, The Bloud Vessels passing in the Nervous *Fibrillæ*: These Bloud Vessels I had an Opportunity once of discovering with my naked Eye in a very small Branch of the *Par Quintum* of the Head, where they were fill'd with *Mercury*, by pouring it into the Carotid Artery; but in examining the same Branch of the Nerve with my Microscope, I discovered a vast Number of smaller Branches of Blood Vessels, which did not before appear, lying still parallel with the Nervous Fibres, as here expresst; tho' without doubt divers of the Trunks of those Blood Vessels do intersect, and pass obliquely over the Nervous Fibres, especially near their Extremities. From those Blood Vessels I am inclin'd to think the Globular Contents of the Nervous Fibres take their rise immediatly, and not from the Brain, as it has been generally suppos'd; since the Fibres of the Brain, as well as the Nerves themselves do neither of them appear Tubulated, or hollowed Pipes according to their Length; but their Cavities are frequently interrupted with divers Cells, which make a Globular like Appearance; and this Structure of the Nervous Tubes is very easily demonstrated in the *Tunica Retina* of the Eye by the Assistance of the Microscope.

C C, A *Fasciculus* of the Nervous-Tubes separated, and expanded.

D D, The Cohesion of the Tubes by lateral Fibres.

E E, The Villous Extremities of the Tubes as they could be delineated. What has been said above, relating to the intimate Structure of the Nerves, interferes very much with those *Hypotheses* commonly propos'd concerning the Animal Spirits, by some call'd *Fluidum Animale*; and that not only because their Original is suppos'd to be in the Brain, but that they are transfer'd from thence by the Nerves so very quick to serve those Offices, to which they are on such frequent Occasions said to be imploy'd in: Neither of which can reasonably, nay possibly, happen, from the Structure of the Nerves themselves: Besides, if the Animal Spirits, or Fluid were ordered to skip up and down at that rate, another visible Impediment would be incident to obstruct them, at the Originals of the Nervous Tubes from the *Medulla Spinalis*; where those Tubes are much contracted, and again expanded, and frame *Gangleons*, as appears in this Figure at E; nor can we conceive what should give the Spirits that *Impetus* to drive them up and down in that manner; wherefore we should rather incline to believe the Contiguities of those *Globuli*, above mentioned, are the Mediums between the Objects, and Common Sensory. There is too much of Argument belongs to this Subject, to be inserted in this Place; wherefore we must proceed in our present Undertaking.

Fig. 7.

A Portion of the *Medulla Spinalis* taken out of the *Specus* of the *Vertebræ* of the Back, together with its Common Integument.

A A, The Back Part of the Spinal Marrow next the Spines of the *Vertebræ*.

B B C, The External, or Common Integument (accompanying that of the *Dura Mater* the whole Length of the *Specus* of the *Vertebræ*) here being partly rais'd and supported with a *Stylus*.

D, The *Dura Mater*, or First Proper Membrane of the Spinal Marrow.

E E E, Divers *Sacculi* of Fat lying between the Proper and Common Membranes of the *Medulla Spinalis*.

Fig. 8.

The Inferior Part of the First *Vertebra* of the *Thorax*:

A, Its Spinal Process,

B B, Its oblique descending Processes, which are Articulated with the ascending Processes of the Superior Part of the Second *Vertebra* of the *Thorax*;

C C, The Transverse Processes.

D, The Body of the *Vertebra*.

E, The great *Foramen* of the *Vertebra*, in which the *Medulla Spinalis* descends.

F F, Some fatty Mucilaginous Glands, which are continued thro' the Inside of the whole *Specus* of the *Vertebræ*.

The Office of these Glands is to separate a Liquor to lubricate the Membranes of the *Medulla Spinalis*, and Inner Part of the *Specus*; which Liquor I have frequently found in such Quantity, as to run out, in breaking up the *Vertebræ* to discover the Spinal Marrow.

THE
ELEVENTH TABLE.

Fig. 1.

THE External Parts of the Eye, as they appear when the Eye-lids are open'd.

A B, The Eye-brow: B, the various Diſpoſition of its Hairs in this Subject.

C, The Great *Canthus* of the Eye next the Noſe.

D, The Leſſer *Canthus*.

E, The Upper Eye-lid.

F, The Lower ——

G, The White of the Eye cover'd with the *Tunica Adnata* or *Conjunctiva*.

H, One of the Lachrimal Glands plac'd in the great *Canthus* of the Eye, call'd *Caruncula Lachrimalis*, and *Glandula Lachrimalis Inferior*.

Fig. 2.

The Eye-lids ſhut.

A, The Eye-brow, as in the former Figure.

C, The Great *Canthus* of the Eye towards the Noſe.

D, The *Leſſer Canthus*.

E, The Superior *Palpebra*.

F, The Inferior *Palpebra*.

Fig. 3.

A A, The Skin with the *Muſculus Orbicularis Palpebrarum* remov'd.

B, The Bone of the Upper Part of the Orbit of the Eye bared.

C, The Great Lachrimal Gland involv'd with Fat.

D D, A faint Appearance of the Excretory Ducts of the Lachrimal Glands, by *Borrichius*, call'd *Hygrophthalmicos*.

E E, Divers little Glands interpos'd between the laſt mention'd Ducts.

Fig. 4.

Parts of the Muſcles of the Eye-lids.

A, Part of the *Muſculus Aperiens Palpebram Rectus*, at its Implantation to the Upper Eye-lid: The Origin of this Muſcle is ſharp and fleſhy at the profoundeſt Part of the Orbit, near the Egreſs of the Optick Nerve, accompanying the *Rectus Oculi Attollens* in its Progreſs, becoming broad, thin and tendonous, as it paſſeth over the Superiour Part of the Bulb of the Eye, to its Implantation at the whole Superior Part of the Upper Eye-lid.

B C, A Portion of the Upper Part of the *Orbicularis Palpebrarum* turn'd down, it ſtill remaining to the Upper Eye-lid: A Deſcription of which Muſcle will be inſerted in the following Table. *Fig.* 4.

Fig. 5.

The Lachrimal *Glandules*, &c. within the Orbit of the Eye, repreſented much bigger than the Life.

A A, The Upper Part of the Bones of the Orbit.

B B C C, The Superior Lachrimal Gland.

D D D, The *Vaſa Lachrimalia*, or *Ductus Hygrophthalmici*, whoſe Orifices open into the Internal Part of the *Palpebra*, whence the ſeparated Liquor, convey'd by the *Tubes*, iſſues to moiſten the *Palpebra*, and External Part of the Bulb of the Eye.

E E E, Divers Lachrimal Glands interſpers'd between the laſt mention'd Ducts.

F F G G, The Cartilages of the *Cilia* joyn'd together with divers Membranes G.

H H, The Hairs of the Eye-lids turn'd Upwards, whoſe Ramifications appear.

I, Part of the Superior Lachrimal Gland, by *Bidloo* call'd, *Glans Lachrimalis*.

K K, The Bones of the Noſe broken off, ſo that the following Ducts may appear.

L, The Ducts, which convey the ſuperfluous Moiſture of the *Vaſa Lachrimalia* from between the *Palpebræ*, and Bulb of the Eye, into the *Foramina Narium*: The Orifices of theſe Ducts appear in the two *Papillæ* of the Upper and Lower Eye-lid, at the Great *Canthus* of the Eye. *Fig.* 1. H. and are evident to the naked Eye, eſpecially in thoſe, who Cry much, and are call'd, *Puncta Lachrimalia*: Soon after theſe Two Ducts leave the Great *Canthus* of the Eye, they are united into One Trunk, call'd the Lachrimal Duct, which deſcends in a *Foramen* of the Second Bone of the Upper Jaw, *Tab.* 92. *Fig.* 1. D. into the Cavity of the Noſtrils. In the great *Canthus* of the Eye ariſe thoſe Tumours, call'd *Ægilopes*, whoſe contain'd Matter, when it degenerates into an Abſceſs, frequently frames *Fiſtula's* in that Part; and when the Membrane, which compoſes the Lachrimal Duct, within the Cavity of the Bone, becomes Tumified; the Paſſage of that Duct is rendred impervious, and Part of the Humor imploy'd in moiſtning the Eye-lids, is hindred in its Diſcharge that Way; whence the Cheeks become inflam'd by its running down on them; in which latter Caſe, beſides opening the Tumor largely, we muſt alſo Perforate the Second Bone of the Upper Jaw or *Os Lachrimale*, into the Cavity of the Noſe, whereby the Lachrimal Humor will afterwards be diſcharg'd: This Operation is beſt Practis'd with a pointed Actual Cautery, fitted with a proper *Cannula* or Director. The Inciſion in theſe Caſes may be made according to the Direction of the Fibres of the *Muſculus Orbicularis Palpebrarum*; and in uſing the Actual Cautery, great care muſt be taken to defend the *Palpebra*; which we have ſometimes ſeen expos'd to the heated *Cannula* thro' the Struggling of the Patient: After this Operation is thus perform'd, it is not neceſſary you ſhould keep the External Wound open to expect an Exfoliation of the Fragments of the Bone thro' it; but after Three or Four days, when the Calloſity is remov'd, and the Matter diſcharg'd, you ought to leſſen your Dozils, or Tents, and permit the *Sinus* to fill with Fleſh, and haſten a Cicatrice, and the Edges of the perforated Bone will paſs off by the Noſtril, as well as that Part of the Bone thruſt in by the Cautery. Nor will any great Inconveniency follow if the Healed up Part ſhould Impoſthumate again, thro' the moving of the Fragments of the Bone towards the External Wound, if it is again open'd by Inciſion to diſcharge them; but ſhould you keep the External Wound open long, either by hard Tents, or Eſchatoticks, you will not only procure a Diſcharge of the ſuperfluous Tears, or Moiſture that way; but the Perforation made in the *Os Lachrimale* will fill up, and you muſt be oblig'd to repeat the Uſe of the Actual Cautery, or thruſt a Probe thro' it. I had almoſt forgot to tell you, that after the Firſt Inciſion made in the External Parts, it is neceſſary you ſhould paſs your Knife down to the very Bone, and divide the Trunk of a large Artery, and Vein, which paſs that way with the Lachrimal Duct, leaſt the Flux of Blood at the time of the Operation ſhould ſo cool the Cautery, as to prevent its Action.

Fig. 6.

The Bulb of the Eye lying within the Orbit after the Superior *Palpebra* is remov'd.

A B, The *Tunica Adnata* plac'd on the Forepart of the *Sclerotis*.

C, The *Iris*, in whoſe Center is the *Pupilla*.

D D, The Lower Eye-lid, *in ſitu*, together with Part of the Upper, diſſected.

E, The Bone of the Orbit.

F, The Margin of the Lower Eye-lid, where the Hairs grow out.

Fig. 7, and 8.

The Muſcles of the Eye, as they appear within the Orbit, when clear'd of the Fat, and adjacent Parts.

A, The *Muſculus Attollens*.

B, (Fig. 8.) *Muſculus Abducens*.

C, *Deprimens*.

D, *Adducens*.

E E, The Internal Part of the Bones of the Orbit.

H, The Tendon of the *Muſculus Obliquus Superior* paſſing thro' the *Trochlea* K, to its Inſertion behind the *Muſculus Attollens*.

I, The External Part of the Bones of the Orbit next the Noſe.

K, The *Trochlea*, or little Cartilage, on which the Tendon of the Oblique Superior Muſcle is reflected.

X, Fig. 7. The Optick Nerve.

Fig. 9.

The Fore-parts of the Muſcles of the Right Eye, when taken out of the Orbit, and clear'd from the Fat, Membranes, and Glands, a; and Expanded.

A, *Attollens*.

B, *Deprimens*.

C, *Adducens*, which *Bidloo* calls *Abducens*.

D, *Abducens*, which he in like manner miſtakes, and calls *Adducens*.

E, *Trochlearis Muſculus*, or *Obliquus Superior cum Trochlea*.

F, The *Trochlea* Cartilage, expreſt *in ſitu*. Fig. 7. K.

G, The *Muſculus Obliquus Inferior*.

H H H, The *Tunica Adnata*, together with another Membranous Tegument deriv'd from the Tendons of the Four ſtraight Muſcles, mention'd by *Realdus Columbus*. Lib. X.

I, Is ſcarce ſeen, but is plac'd in the Center of the Bulb, and diſtinguiſhes the *Pupilla*.

K, Part of the Optick Nerve.

Fig. 10.

The Back Parts of the Muſcles of the ſame Eye, when taken out of the Orbit, &c.

A, The *Muſculus Abducens*, or *Indignatorius*.

B, *Adducens*, or *Bibitorius*.

C, *Obliquus Inferior*, or *Breviſſimus Oculi Muſculus*.

D, *Attollens*, or *Superbus*.

E, *Deprimens*, or *Humilis*.

F, *Obliquus Superior*, ſeu *Longiſſimus Oculi Muſculus*.

G, The *Trochlea* Cartilage.

H, A Portion of the Optick Nerve.

I, The Back Part of the Bulb of the Eye, compos'd by the *Tunica Sclerotis*.

Fig. 11.

The Bulb of the Eye and Optick Nerve free'd from the Muſcles and their Common Membranes, ſo that the proper Membranes of their Surface appear.

A, Part of the *Tunica Adnata*, which is continued to the Internal Part of the *Palpebræ*, which can by no means prevent the Retraction of the Eye, when any of the ſtraight Muſcles Act, as ſome Anatomiſts conjecture.

B D, The *Tunica Sclerotis*.

C, The *Tunica Cornea*, circumſcrib'd by the *Iris*, in whoſe Center is the *Pupilla*.

E, The Optick Nerve cover'd with a Tunick deriv'd from the *Dura Mater*.

Fig. 12.

A A, The *Sclerotis* open'd, to ſhew the Choroeide Tunick immediately under it.

B, The *Tunica Choroides*.

C, The *Cornea*, *Iris*, &c. as in the preceding Figure.

Fig. 13.

Part of the *Ligamentum Ciliare* view'd with a Microſcope.

A A B B, The *Ligamentum Ciliare* conſiſting of Two Sorts of Fibres; the one extended thro' its whole Breadth, A A; the other end in the Mid-way B B: Between theſe are plac'd divers Lymphe-ducts according to *Bidloo*. This Muſculous Contexture of the *Ligamentum Ciliare* moves the *Uvea*, or Fore-part of the *Tunica Retina* compoſing the *Iris*, by which means the Inner Edge of the *Iris* approaches towards the Center of the *Pupilla*, or is retracted, whereby the Pupil is enlarg'd, or diminiſh'd according to the different Radiation of Light. In ſome Animals, as Cats, &c. we find a Muſculous Structure in the *Iris* alſo, for a more effectual narrowing their Pupils; which Contrivance in thoſe Creatures, perhaps, is the more requiſite in regard their Horny Tunicks have a Surface not ſo prominent in Proportion to the Bulbs of their Eyes, as thoſe of other Animals.

Fig. 14.

The Bulb of the Eye together with a Portion of the Optick Nerve, where a Diviſion of the *Tunica Sclerotis* together with the *Choroides* is made, to exhibit the *Tunica Retina*.

A, The *Tunica Retina*.

Fig. 15.

Part of the Optick Nerve together with the Tunicks of the Eye, after the Humors (*Fig.* 19, 20.) are taken out.

A, The Inner Surface of the *Tunica Retina*.

Fig. 16.

Another View of the Internal and External Surface of the Tunicks of the Eye, after the Humors are diſcharg'd.

A A, The *Tunica Sclerotis*.

B, The *Cornea*.

C, Part of the Optick Nerve.

Fig. 17.

The Internal and Fore-part of the Tunicks of the Eye, when the Humors are diſcharg'd by a tranſverſe Section thro' the Bulb.

A, The *Tunica Cornea*.

C, The Inner Surface of the *Iris*, next the *Ligamentum Ciliare*.

D, The *Tunica Retina Choroidis*, and *Sclerotis* together.

Fig. 18.

The Inner Surface of the Back Part of the laſt mention'd Tunicks of the Eye.

A, Part of the Optick Nerve cut off; in which Diviſion its Blood-Veſſels are expreſt.

B, The *Tunica Sclerotis*.

C, The *Tunica Retina*, *in ſitu*.

Fig. 19, and 20.

The Vitreous and Cryſtalline Humors of the Eye, when taken out of the Tunicks.

A, The Cryſtalline Humor.

B, The *Veſtigia* of the Ciliar Ligaments on the Vitreous and Edge of the Cryſtalline Humor.

C, The Vitreous Humor.

Fig. 21.

A B, The Cryſtalline Humor taken out; A, its Fore-part next the Aqueous Humor; B, as it appears Laterally.

The Aqueous Humor cannot eaſily be expreſt after the Life, wherefore we ſhall here ſpeak of its Interſtice, where it is lodg'd, whereby its Figure is circumſcrib'd; its Fore-part is Convext by means of a Concave fram'd by the *Cornea* in the Center, and *Iris* in the Circumference; the Back Part of the Aqueous Humor is Concave, to receive the Convex Surface of the Cryſtalline Humor; it's ſides are Circular, conformable to the Cavity of the Bulb; whence it appears the Aqueous Humor is Circular in its Circumference, Convext forewards, and Concave backwards, like the following Figure.

Fig. 22.

A, The External and Fore-part of the Vitreous Humor.

B, A Concave in the Vitreous Humor, which receives the Cryſtalline Humor. The Tunicle, which is ſaid to incloſe the Vitreous Humor, do's not appear, but when it is expos'd to the Air; wherefore *Dr. Briggs* ſuppoſes it to be meerly adventicious.

Fig. 23.

A B, The Cryſtalline Humor dri'd; which *Bidloo* according to ſome Anatomiſts, calls *Tunica Aranea*, or *Cryſtalloeides*.

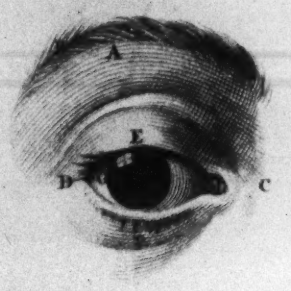
Fig. 24.

A B, The Vitreous Humor dri'd in like manner; leaving its ſuppoſed inveſting Membrane only.

I ſhould in this place (as I have hitherto, and ſhall hereafter in deſcribing of Parts, to which any conſiderable Operation of Surgery do's belong) ſpeak of the Couching of Cataracts; but I am afraid I have already tranſgreſs'd the limits of my Page; wherefore I ſhall only tell you that in Practiſing that Operation, the Puncture thro' the *Adnata*, ought to be at a greater Diſtance from the *Pupilla*, than Authors commonly direct; and that a round Needle is to be preferr'd; for the edges of the Needle elſe are lyable to wound the Blood-Veſſels of the Choroeid Tunick largely, and an Extravaſation of Blood happens between that Tunick, and the *Sclerotis*; which may be of ill conſequence to the Patient.

THE

Fig. 1.



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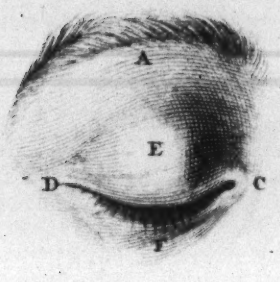
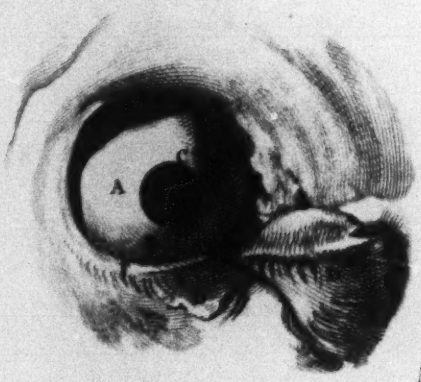


Fig. 3.

Fig. 6.



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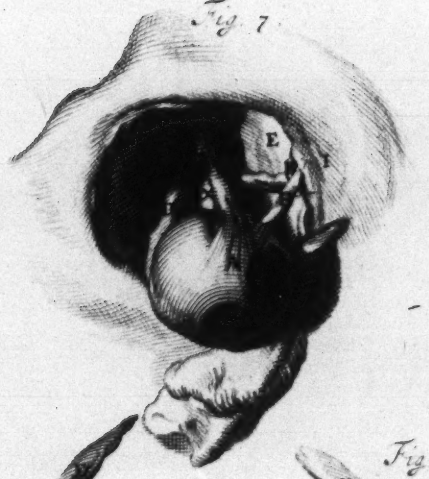
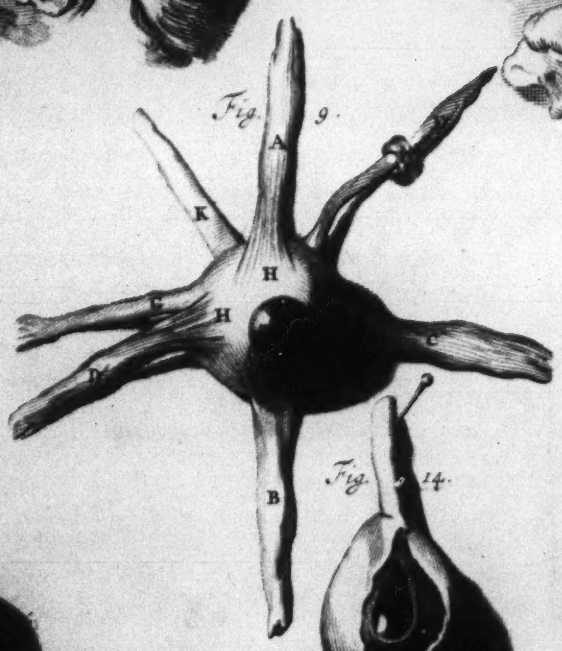


Fig. 8.

Fig. 9.



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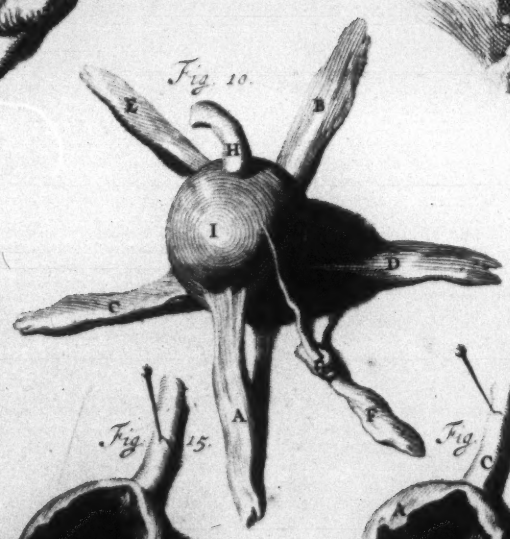

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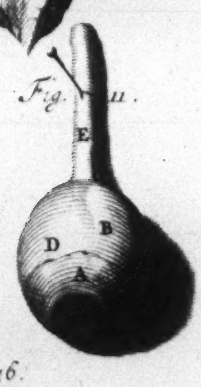

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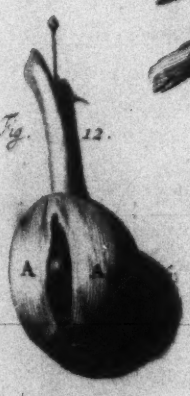
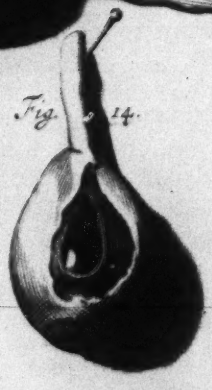


Fig. 14.



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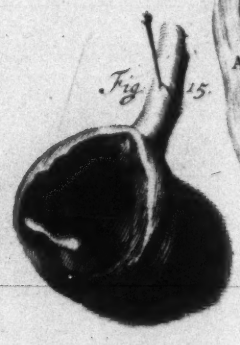


Fig. 16.

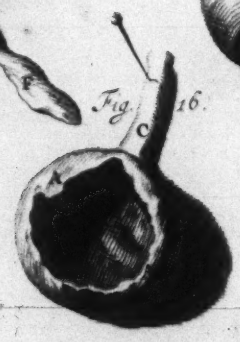


Fig. 21.

Fig. 19.

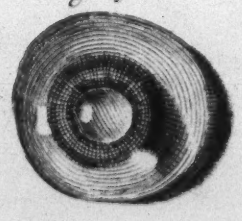


Fig. 20.

Fig. 18.

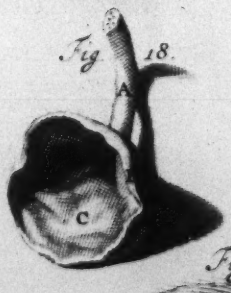


Fig. 17.

Fig. 13.

Fig. 5.

Fig. 4.

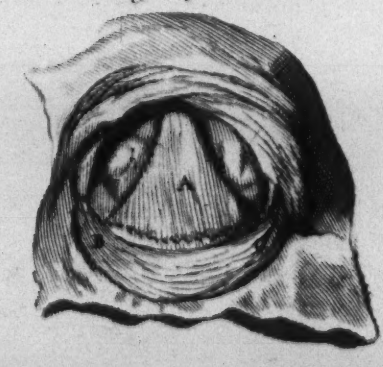


Fig. 22.

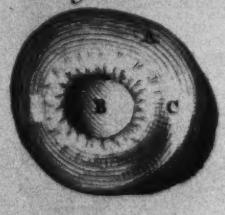
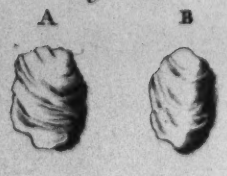


Fig. 23.



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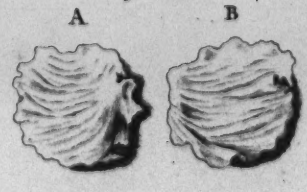


T. 12.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 2

THE
TWELFTH TABLE.

Fig. 1.

IN this Figure there is a Repetition of the ſame Letters of the Alphabet; the one on the External Parts of the Auricle; the other on its Muſcles, and Parts adjacent:

The Firſt.

A A, The External Margin of the Outward Ear, call'd *Helix*, and *Capreolus*, from its Tortuous Diſpoſition.

B B, *Anthelix Auriculæ*.

C, *Hircus Auriculæ*, by ſome call'd *Antitragus*.

D E, Circumſcribe the *Concha*; D, *Tragus Auriculæ*, below which is the *Lobus*.

The Second.

A, The *Muſculus Attollens Auriculam*; which derives its partly fleſhy, and Membranous Origin, from above the Temporal Muſcle, and deſcending over it to its Inſertion at the Superior Part of the Cartilage of the Root of the Auricle.

B C C, The *Muſculus Retrahens Auriculam*, whoſe Origin we have always obſerved with *M. Du Verney*, to be from the *Apophyſis Maſtoides*; the whole Muſcle is here expreſt much larger than it is commonly found.

D D, Part of the Parotid Gland cleaving to the Outward Ear:

E F F, The Excretory Ducts ariſing from that Gland, which compoſe the *Ductus Salivalis Superior*.

G, Part of the *Ductus Salivalis Superior*.

Fig. 2.

Exhibits the Back Part of the Auricle, when cut off.

A, The Skin, *&c.* divided from the Hairy-Scalp, and free'd from the *Cranium*.

B, The Internal, or Back Part of the Ear next the Skull.

C, The Inferior Part of the Auricle.

D, The *Meatus Auditorius*;

E, The Thickneſs of its Cartilage.

Fig. 3.

Repreſents the Ramifications of the *Ductus Salivalis* injected with Wax, and free'd from the Parotid Gland.

A, The Trunk of the *Ductus Salivalis* cut off at its Progreſs over the *Muſculus Maſſeter*.

B B C, The Ramifications of the Salival *Ductus* free'd, which ariſe from the Extremities of the Arteries within the Parotid Gland.

Fig. 4.

Repreſents divers Muſcles of the Face after the *Quadratus Genæ* is taken off.

A, This formal Appearance of circular Fibres about the *Alæ Naſi*, I ſuſpect to be fictitious, having never obſerv'd ſuch a Diſpoſition in any Subject, tho' I have purpoſely examined this Part; yet the like Figure of them may be ſeen in *Placentinus*.

B, A Muſcle, whoſe Poſition renders it capable of pulling up the *Ala Naſi*; whence it is called *Elevator Alæ Naſi*; and by *Caſſerius*, *Pyramidalis*, from its Figure; nor do we commonly find this Muſcle in Diſſection; the fleſhy Fibres on this Part, frequently taking the ſame Courſe with thoſe of the *Orbicularis Palpebrarum*, do paſs by the *Ala Naſi*.

C, The *Muſculus Elevator Labii ſuperioris proprius*.

D D, The *Orbicularis Palpebrarum*; This is a thin fleſhy Muſcle, circularly environing the Eyelids, to which it is inſerted, not unlike the *Sphincter* Muſcles of other Parts, as of the Lips, and the Bladder of Urin: It acts in drawing the Eyelids nearer each other; which we call ſhutting the Eyelids; but if this Muſcle Acts vigorouſly, it not only draws the Eyelids cloſe together, but forces the Bulb of the Eye into the Orbit. *Galen* and the ancient Anatomiſts not diſcovering the *Muſculus Aperiens Palpebrarum Rectus*, (ſince found out by *Fallopius*,) were at a loſs for aſſigning a proper Inſtrument to draw up the Upper Eyelid; wherefore they erroneouſly divided this Orbicular Muſcle into Two: The like error has been incident to ſome later Writers, among which *Bidloo* falls into the ſame Miſtake.

E, The *Zygomaticus* or *Diſtortor Oris*.

F, A Branch of an Artery, which ariſes from the Carotid in the Neck, and paſſing through the Inferior Maxillary Gland, runs over the Lower Jawbone, at the Inſertion of the *Maſſeter* Muſcle, as it is here expreſt.

I have frequently met with Tumors on this Part, which have required Inciſion; in which Caſe the dividing of this Artery ought to be regarded; wherefore I have rather choſen firſt to make Two Perforations, one on each Side this Artery, whether by Cauſtick or otherwiſe, and then paſs a Ligature to comprehend the Artery for ſome Days; and tho' I cannot adviſe the Practice of letting the Ligature divide the whole, by frequently ſtraightening it; yet in Three or Four Days time the Ligature will ſo compreſs the Artery, that you may cut through free from any dangerous Flux of Blood.

G, The *Os Jugale*.

H, The Lower Jawbone made bare by the removing of the Skin, and *Muſculus Quadratus Colli*.

I, Part of the Carotid Artery.

K M N, The Temporal Muſcle; K N its Outſide; M its Inſide next the *Cranium* turned down.

L, Part of the Parotid Gland, the greater Part of which Gland being cut away, to exhibit the following Muſcle.

O, The *Muſculus Maſſeter in ſitu*: The Origination, Progreſs, and Inſertion of this, and the Temporal Muſcle, are ſufficiently expreſt in this, and the following Figure.

Fig. 5.

Exhibits the Muſcles of the Lips, and ſome of thoſe of the Lower Jaw.

A B C, The *Muſculus Buccinator* free'd from its Origin at the *Proceſſus Coronæ* of the Lower Jaw, (nearer N) and left at its Inſertion at the Angle of the Lips: Here we may obſerve, that in this Figure (as in the Life) the Fibres of this Muſcle run according to its Length, contrary to the Deſcription *Bidloo*, and others give of it; through this Muſcle paſſes the *Ductus Salivalis* of the Parotid Gland into the Mouth.

D, The *Muſculus Elevator Labiorum Communis*; This ariſes from the *Os Quartum* of the Upper Jaw, and deſcends directly to its Inſertion under the Termination of the *Zygomaticus*; in this Figure (as we have likewiſe ſeen it) a *Faſciculus* of fleſhy Fibres of this Muſcle run over the Termination of the *Zygomaticus*.

E E, The *Elevator Labii ſuperioris proprius*, and the *Muſculus Dilatator Alæ Naſi*.

F, The *Muſculus Zygomaticus*.

G, *Depreſſor Labiorum Communis*.

H, *Depreſſor Labii inferioris proprius*.

I, *Conſtrictor Labiorum*.

K M N, The *Temporalis*; N, its Implantation at the *Proceſſus Coronæ* of the Lower Jaw.

L, Part of the Parotid Gland.

O, The *Maſſeter* cut from its Origin at the *Os Jugale*, and left at its Inſertion to the Lower Jaw.

P Q, Part of the Origin of the *Muſculus Pterygoideus externus in ſitu*; This ſprings from the External Part of the *Proceſſus Pterygoides*, and Upper Part of *Os Sphenoeides*, and runs backwards to its Inſertion at the Neck of the *Proceſſus Condyloides*: To diſcover the Progreſs of this Muſcle, the *Proceſſus Coronæ* ſhould be cut off with a Chizel.

R, The *Proceſſus Condyliformis* of the Lower Jaw, which is here in a great Part lay'd bare.

S, Part of the *Muſculus Digaſtricus* of the Lower Jaw.

THE

THIRTEENTH TABLE.

Fig. 1.

THE External Parts of the Noſe, together with the Tongue, *Fauces*, *Gargareon*, and the like, *in Situ*.

A, The Back of the Noſe.

B, The *Spine*,

C, The Tip,

D, The *Septum Narium* or Bridge,

EE, The *Alæ Naſi* or Sides of the Noſe.

FFF, The Cheeks divided, ſo that the Parts within the Mouth may appear.

G, The Tongue.

H, The *Gargareon* or *Uvula in Situ*, cover'd with the Glandulous Membrane of the Palat.

I, The *Tonſillæ* deſcribed in our *Appen. Fig.* 9.

KK, The Gums of both Jaws.

LL, The Palat or Roof of the Mouth, whoſe Glandules are expreſt *Tab.* 14. *Fig.* 4. B C.

M, The Upper Part of the *Epiglottis* raiſed through the Depreſſure of the Tongue. We ſeldom ſee the *Epiglottis* in looking into the Mouths of Living People; but in ſome few I have ſome times ſeen its Upper Part, by very much depreſſing the Tongue to inſpect the *Fauces*; in ſuch Perſons ſome (very Ignorant in Anatomy) have taken it for an Excreſcence, and have propoſed its Extraction. A Miſtake, equally as pernicious, has been incident to ſome Practitioners, in ſuppoſing the *Foramina* of the *Excretory Ducts* of the *Tonſillæ* when fill'd with a Tenacious Matter, (as in Caſes of taking Cold, as it's call'd, *&c.*) to be Ulcers; as *Fallopius* takes notice.

Fig. 2.

The Outward Covering of the Tongue view'd with a Microſcope: This Figure together with the 3d, 4th, 5th, 6th, 7th, and 8th, were done after the Tongues of ſome *Quadrupedes*, as of Bulls, Sheep, or the like. With the Aſſiſtance of a Microſcope, an Appearance not altogether unlike this may be found on a Humane Tongue; without any Horny Covering like that deſcribed by *Bidloo* in theſe Figures, as follows.

A, That Part towards the Tip of the Tongue,

B, That towards the Root may be ſeen, ariſing from the Membrane underneath, a ſort of Bodies of a Toothlike Form C C, *&c.* hard as Cartilages, or the Nailes; for which reaſon (ſays he) I call them *Ungulæ:* Betwixt theſe (he further adds) are placed certain forked Bodies of the ſame Structure: (See *Fig.* 3.) Between theſe Two Kinds of Bodies, and ſometimes upon them, are placed certain Bladder-like *Pyriformal*, and *Pellucid Globuli.* (*Fig.* 2. D.) Theſe *Ungulæ* are framed by the manifold joyning together of *Fibrous Lamellæ.* (See *Fig.* 4. A.) whoſe Middle B, is Medullary and Pervious; but the *Globuli* are hollow like Bladders: Both theſe kinds are clotted about with a ſtrong tenſile Membrane (*Fig.* 2. E.) to which they are faſtned on their Sides. This Membrane is ſupported with Hairy *Stamina* F. like the Membrane immediatly under it, which ſubjacent Membrane is Perforated by the aforeſaid Bodies, as appears in (*Fig.* 6.) In ſome of the Interſtices of theſe Bodies there may certain Cavities G, *Fig.* 2. be diſcover'd; whoſe Bottom is very Porous. The Appearance of the Back Part of theſe Bodies is repreſented in *Fig.* 5. A, The broken *Globuli.* B, The *Aſperities* of the *Ungulæ.* C, The Hairy Membranous Covering. D, The porous Apertures. The Upper Covering being remov'd, the Second or Subjacent Membrane, mention'd above, comes in view. *Fig.* 6. Spread like a Net; the Duct of whoſe Fibres is ſo intricate and various, that nothing certain can be determin'd of their Order; For in a Raw Tongue it is glutinous, in a Boyl'd one extendible; its Superiour Part expreſt in this Figure, is whitiſh and thinner; but the Lower is obſerv'd to be thick, and more tenacious. (See *Fig.* 7.) Its Perforations A A, *Fig.* 6. anſwer to the Number of the *Ungulæ*: Here alſo may be obſerv'd ſeveral ſmall Veſſels B, creeping along, and running to the Superficies of the Tongue. The Edges of theſe Perforations are made rough by ſmall Fibres and Veſſels of their own, as well as of the broken *Ungulæ.* The like Structure may be obſerv'd every where in the Membrane in the Inſide of the Mouth, eſpecially in the Palat. Under this Net-like Covering ſome Nervous Papillary *Plexus.* *Fig.* 8. A, and certain Glands B are hid; the Tops of which are inſeparably joyn'd to the above nam'd Medullary Middles of the *Ungulæ*: So that theſe *Ungulæ*, like little Horns, cover thoſe Papillary Bodies like a Membrane ſpread over them: Theſe *Papillæ* are tyed in ſeveral Places to the Carnous Fibres of the Tongue; of theſe, ſome are Large C; ſome Smaller D; ſome confuſed and in Heaps E; others more diſtant, and diſtinct, and of different Figures; about Theſe are placed a great many Glands F, to which the Veſſels of the Net-like Covering do adhere. The ſame Organs, tho' in a larger Form, do ariſe out of the Coverings of the Lips and Cheeks, as above.

Fig. 9.

The Muſculous Structure of the Tongue.

A A, The External Order of Fibres continued according to the Length of the Tongue, (*viz.*) from its *Baſis* to its Tip; between theſe are interſperſed (B B B) divers Glandules and Lobes of Fat, B B.

C D, The Second Order of Fibres of the Tongue, which deſcend from the Upper Part towards its *Baſis.*

E F, Other Fibres ariſing from the *Baſis* go to the Superficies of the Tongue.

G H, Others carried from the Middle of the Tongue towards the Sides; the Tendinous Extremities of theſe Fibres are faſtned to the Coverings of the Tongue: At the Middle of the lower Part of the Tongue, are Two diſtinct *Claſſes* of Fibres very intricately diſpoſed, which contribute to thoſe various Motions the Tongue is neceſſarily imploy'd in, whether in Speaking, Maſtication, or the like.

Fig. 10.

The Structure of the Gums magnifyed with a Microſcope.

A A, Part of the Gums.

B B, Two of the Foreteeth.

C, The Covering of the Gums opened.

D, The Duct of the Fibres.

E, The Glands ſituated between the Fibres.

F, Part of the Upper Jaw broken off.

THE

Fig. 2.

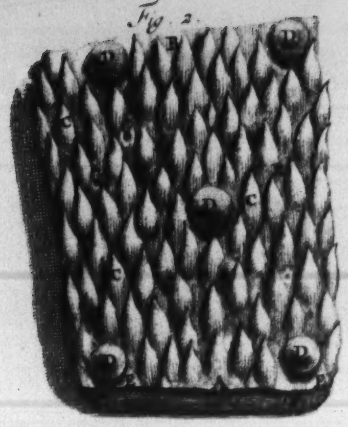


Fig. 5.

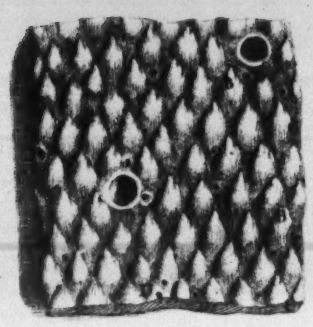
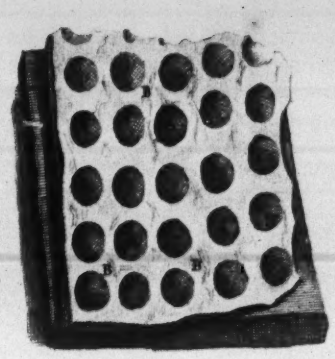


Fig. 6.



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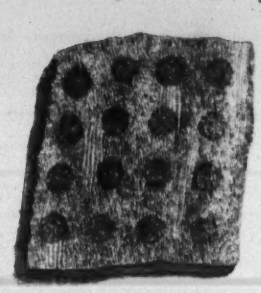


Fig. 4.

Fig. 3.

Fig. 1.

Fig. 8.

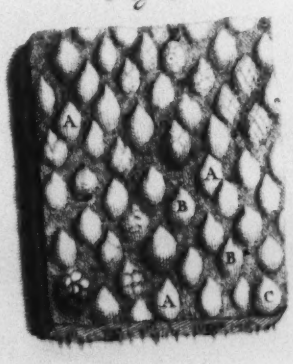


Fig. 9.

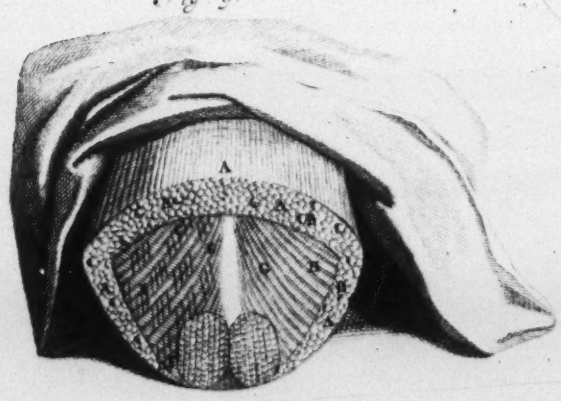


Fig. 10.

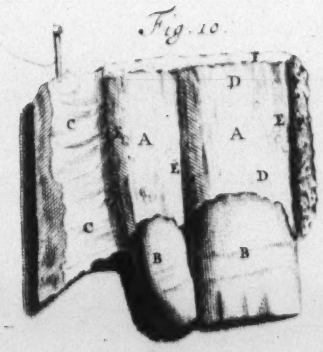


Fig. 1.

Fig. 4

Fig. 2

Fig. 3

Fig. 5

THE FOURTEENTH TABLE.

Fig. 1.

DIVERS Muſcles of the Tongue, *Os Hyoides*, and *Larynx*, as they appear in their proper Situation, after the Side of the Lower-Jaw is taken off.

A A B B, The Tongue Pinn'd up B.

C, The *Muſculus Styloglosſus in Situ*; It ariſing from the *Proceſſus Styloides* is inſerted to the Root of the Tongue immediately below the Implantation of the *Ceratoglosſus*; it draws the Tongue up, and inwards, in the Action of *Deglutition*.

D D, The *Muſculus Ceratoglosſus*, Ariſing Fleſhy from the Horns at the *Os Hyoides*, and is ſo Inſerted to the Tongue: If this with its Partner Act, they draw the Tongue directly into the Mouth; if One of them Acts, it pulls the Tongue to one Side.

E F G I L, The *Muſculus Genioglosſus in Situ*; It ariſing from the Middle of the Internal Part of the Lower Jaw, and is Implanted at the Root of the Tongue; when this with its Partner Act, they draw the Tongue Forwards, and thruſt it out of the Mouth.

H, Part of the *Fauces* contiguous to the Root of the Tongue.

K, Part of the *Muſculus Sternohyoideus*.

L, Part of *Coracohyoideus*.

N. B. *That* L *is inſerted in Two different Parts of this Figure; wherefore the Reader is deſired to take Notice that the Lowermoſt belongs to the laſt Reference.*

M, The *Muſculus Styloceratohyoideus*; Its Origin, Progreſs and Inſertion, are ſo well expreſt in the Figure, that there needs no other Deſcription to be added; this Muſcle, together with the *Styloglosſus*, and *Stylopharyngæus*, with their Partners on the other Side, Act in Drawing up the *Os Hyoides*, *Tongue*, *Larynx*, and *Pharynx* in *Deglutition*; by which means the Aliment when fitted for Swallowing, do's not only Deſcend into the *Pharynx* (which is at that Time dilated;) but the *Epiglottis* is in that Poſition of the Tongue by conſequence depreſt, and adequately Covers the *Rimula* of the *Larynx*; whereby, the leaſt Particle of the Aliment is hindred, in its Deſcent into the *Larynx*, and *Aſpera Arteria*; which is a wonderful Mechaniſm in Nature! Hence 'tis we can by no means Expire in the Action of Swallowing of the Aliment, without ſome Part of it Deſcending into the *Rimula* of the *Larynx*; which is ſo troubleſome as to cauſe an inceſſant Coughing, till it's ejected.

N, The *Muſculus Mylohyoides*, Cut from its Origination at the Internal Part of the Lower Jaw-Bone, and left at its Implantation to the Middle and Upper Part of the *Os Hyoides*.

O, The *Geniohyoides* Muſcle *in Situ*.

P, The Middle Part of the Lower Jaw-Bone, which compoſes the Chin, broke off.

Q, The Internal Surface of the Upper Lip.

R, The Inſide of the Cheek.

S, The *Guſtatory* Nerve; being a Branch of the Fifth Pair of Nerves of the Brain, in its Way to the Tongue.

T, The Motory Nerve of the Tongue, ſpringing from the Ninth Pair of the Brain.

t, A ſmall Branch of the Ninth Pair going to the *Larynx*.

V, The Left Horn of the *Os Hyoides*.

W, The Trunk of the *Carotid Artery*.

X X, The *Muſculus Digaſtricus* left to its Origination at the *Proceſſus Maſtoides*.

Fig. 2.

Repreſents, according to *Bidloo*, the Salival Ducts free'd from the Inferior Maxillary Gland, expreſt *in Situ*, in *Fig.* 1. of the following Table M M. I cannot conceive this Figure of the Salival Ducts was deſign'd after the Life; nor do's it expreſs any other Excretory Duct which occurs to my Memory; wherefore I ſhall here add the Deſcription of it by *Bidloo*.

A, The Twigs of the Salival Duct, above mention'd, injected with Wax, and free'd from the Glandules: B, The larger Branches: C, The Common Duct: D, It's Orifice incloſ'd with an Edging. E, Part of the inveſting Membrane of the Mouth cut off. See the Figure of the Salival Ducts of the Lower Maxillary Glands, together with the Sublingual Glands in our *Appendix*.

Fig. 3.

The Inner Face of the Upper Jaw, and *Fauces*, after the Lower Jaw is taken off.

A, The Roof of the Mouth, or Palat.

B B, The Glandulous Membrane of the *Fauces* near the *Tonſillæ*.

C C, Divers *Foramina* in the Surface of the Glandulous Membrane of the Mouth or Palat, thro' which iſſues a Juice ſeparated in its Glandules, expreſt *Fig.* 4. B, B, C, C.

D E, The Forepart of the Palat near the *Dentes Inciſores*, where the Bone underneath is Perforated, to tranſmit divers Blood-Veſſels and Nerves; but in Bulls and ſome Animals, in this Part, is a Perforation thro' both the Membrane of the Palat, and that of the Noſtrils, and is a common Paſſage between their *Foramina Narium* and Mouths; which in them is call'd *Fretum*, and ſerves to convey Part of the Matter ſeparated by the Glands of their Noſtrils into their Mouths.

F F, A *Stylus* put thro' the Left Noſtril into the *Fauces*.

G, The *Uvula* or *Gargareon* hanging down from the Palat.

H, The Glandulous Membrane which helps to compoſe the Back Part of the *Fauces*.

I I, Parts of the *Muſculi Flexores Capitis*.

K K, Parts of the *Longi Colli*.

L L, The *Vertebræ* of the Neck.

Fig. 4.

The Inſide of the Membrane of the Palat, as it appears when Rais'd, and View'd with a Microſcope.

A A, The *Tunica Palatina* Rais'd from the Bone, and Pinn'd out.

B C D, The Glandules, and Carnous Fibres, which compoſe the Membrane.

E E, Two *Dentes Inciſores*.

F, The Fourth Bone of the Upper Jaw, by ſome call'd *Os Palati*, whoſe Surface is full of *Veſtigia*, where the *Tunica Palati* did Adhere.

Fig. 5.

The *Foramina Narium* Open'd, by taking off the Greater Half of the Fourth Bone of the Upper Jaw, or *Os Palati*.

A A B B, The Pituitary or Glandulous Membrane, which inveſts the *Foramen* of the Left Noſtril, ſeparated from the *Septum Narium* B.

C C, The Glandulous Membrane extended, ſo as to receive a ſtrong (D D) Reflection of Light, by means of a *Stylus* D D, introduc'd as in *Fig.* 3. The Structure of this Glandulous Membrane is altogether agreeable to that of the Palat *Fauces*, &c. ſo that we need not ſay more of it in this Place; but that it is not only extended to all the tortuous Meanders of theſe Cavities of the Noſtrils, but it alſo inveſts the Cavities of the Cheek-Bones, *Os Sphenoides*, and *Frontis*; all which communicate with the Noſtrils, where they diſcharge their *Pituita*; as ſhall be demonſtrated in the *Oſteological* Part of this Work.

THE
FIFTEENTH TABLE.

Fig. 1.

DIVERS Muſcles of the Lower Jaw, and *Os Hyoides in Situ*, the Skin, and *Muſculus Quadratus Colli* being Remov'd.

A B C, The Muſculus *Digaſtricus* or *Biventer*; B, its Fleſhy Origination from the *Proceſſus Mammillaris*; C, its Middle Tendon paſſing thro' the *Muſculus Styloceratohyoideus* (N), and an Annular Ligament ariſing from the *Os Hyoides*, to its Fleſhy Termination A, in the Lower Jaw (D).

The Middle Tendon of this Digaſtric Muſcle, and its Partner, paſſing thro' Two Annular Ligaments Fixt to the *Os Hyoides*, as the Ropes thro' a Double Pully, is a neceſſary Contrivance in Nature to render them capable of pulling the Lower Jaw Down; which, had their Progreſs been direct from their Originations, they could not have perform'd; nor is there any Proceſſes, whether of the *Vertebræ* of the Neck, or Neighbouring Parts, that could give Originations to theſe Muſcles below their Inſertions, as in ſome Quadrupedes: Wherefore the Divine Architect, in Humane Bodies, has plac'd this Double-Pully below their Terminations, by which means they are made capable of performing their deſign'd Office. Hence *Deglutition* is Hindred, when theſe Muſcles are in Action, they at that Time preventing the Aſcent of the Tongue, and *Larynx*; neither can we in the Time of Swallowing, draw the Lower Jaw down, becauſe the *Center of Direction* is pull'd up; wherefore we are oblig'd to keep the Jaws cloſe in that Action. But in Dogs, and other Voracious Animals, (wherein theſe Muſcles Ariſe from the Tranſverſe Proceſſes of the Firſt *Vertebra* of the Neck) theſe Actions do not Depend upon each other; whence it is they devour their Aliment ſo Quick.

D, The Inferior Edge of the Lower Jaw Bone made bare.

E E, The *Muſculus Mylohyoideus*, which derives its Fleſhy Origin from the Internal Part of the Lower Jaw, partly under the Inferior Maxillary Glands, and partly at the Inſertions of the *Muſculus Digaſtricus*; whence Deſcending with a Double Order of Fibres, here elegantly Expreſt, is inſerted to the Superior and Forepart of the *Os Hyoides*. Immediately under this Muſcle lie the *Glandulæ Sublinguales*, and Salival Ducts of the Inferior and Maxillary Gland; both which are Compreſt by it, and their contain'd *Saliva* driven Forewards into the Mouth when this Muſcle Acts, as in *Deglutition*, &c.

F F, The *Muſculi Sternohyoidei*, Ariſing from the Internal and Superior Part of the *Claviculæ*, and not from the *Sternum*, as it's Vulgarly ſuppos'd, and are inſerted to the Inferior, and Forepart of the *Os Hyoides*.

G G, Parts of the *Coracohyoidei*, coming from under the *Maſtoid* Muſcles (II).

H H, Parts of the *Sternothyroidei*, which ſpring from the Superior and Internal Part of the *Sternum*, and march under the *Sternohyoidei* to their Terminations in the *Thyroide Cartilage*, as appears in the following Figure.

I I, The *Maſtoidei*.

K, Part of the *Maſſeter* on the Right Side.

L, Part of the Parotid Gland on the ſame Side.

M M, The *Glandulæ Maxillæ Inferioris*.

N, That Part of the *Muſculus Stylohyoideus*, that is Perforated to tranſmit the Middle Tendon of the *Biventral* Muſcle of the Lower Jaw; which together with an Annular Ligament, ſpringing from the *Os Hyoides*, in like manner involving the laſt mention'd Middle Tendon of that Muſcle, do's like a Pully render it capable of pulling the Lower Jaw down, as above Noted.

O, Part of the Internal Jugular Vein.

P, Part of the Carotid Artery.

Q, A Blood-Veſſel cut off and ti'd.

Fig. 2.

Divers Muſcles lying under thoſe expreſt in the former Figure.

A A A, The Lower Edge of the Inferior Jaw-Bone laid bare.

B B, The *Muſculi Sternohyoidei* free'd from their Inſertions, and left at their Originations.

C C C C, The *Coracohyoidei* are a Pair of Digaſtrick Muſcles; they Ariſe Fleſhy from the *Proceſſus Coracoides Scapulæ*, and Aſcend under the *Muſculi Maſtoidei* where they become Tendinous, but Growing Fleſhy again, are Inſerted at the *Baſis* of the Fore-Bone of the *Os Hyoides*; this draws the *Os Hyoides* downwards, and pulls it ſomewhat inwards.

D, Part of the *Muſculus Stylohyoideus* at its Termination.

E E, The *Muſculus Mylohyoideus*; on the Right Side not quite Free'd from its Origination; on the Left, ſo Rais'd, as that the *Glandula Sublingualis* W, do's Appear; this *Bidloo* calls *Geniohyoidei*.

F F, The *Geniohyoidei*, by *Bidloo* call'd *Anthereohyoidei*; they Ariſe Fleſhy from the Internal Part of the Lower Jaw, which compoſes the Chin, and are Inſerted to the Superior, and Forepart of the *Os Hyoides*: When theſe Muſcles Act, the *Os Hyoides* is pull'd Upwards, and Forewards, and Aſſiſt the *Genioglo'i* in Thruſting the Tongue out of the Mouth.

G G, The Digaſtrick Muſcles of the Lower Jaw cut from their Inſertions.

H H, The *Maſtodes* Muſcles; that of the Right Side being cut from its Origination and left at its Inſertion; that of the Left remaining *in Situ*.

I, The Scutiformal Cartilage of the *Larynx*, which makes what they call, the *Pomum Adami*.

K, The *Aſpera Arteria* or Wind-Pipe.

L L, The *Glandulæ Thyroidææ*.

M, The *Muſculus Maſſeter in Situ*.

N, The *Muſculus Pterygoideus Internus in Situ*; it Ariſes partly Tendinous, and partly Fleſhy, from the Cavity of the Winglike Proceſs of the *Os Sphenoides*. *Tab.* 29. *Fig.* 2. K. whence it Deſcends to its Implantation at the Internal and Inferior Part of the Lower Jaw-Bone, oppoſite to the Termination of the *Maſſeter*: Either this, or its partner Acting, draws the Jaw to the contrary Side; if both Act, they Aſſiſt the *Muſculi Temporales*, and *Maſſeteres*.

O, Part of the Parotid Gland.

P, The *Muſculus Hyothyroideus*; it Ariſing from the *Os Hyoides*, is Inſerted to the Lower Part of the Scutiformal Cartilage; this draws the *Larynx* Upwards in an Acute Tone of the Voice.

Q, The *Cricothyroideus*. See *Tab.* 24. *Fig.* 5. H H.

R, The *Sternothyroideus* ending in the Scutiformal Cartilage.

S, The Internal Jugular Vein, whoſe Lower Part is at ſome diſtance plac'd under that Part of the *Maſtoid* Muſcle, (*App. Fig.* 1. 14.) which ſprings from the Clavicle, which Part of that Muſcle is moſt commonly Contracted in thoſe who are ſaid to have Wry Necks, which the Operator in that Caſe ought to Obſerve, leaſt in too boldly Thruſting in his Knife to divide the contracted Part, he alſo Wounds this large Blood-Veſſel, and the Flux of Blood prove Deſtructive to the Patient; for tho' its Flux may eaſily be reſtrain'd outwardly, yet the Vein lying in ſo large an Interſtice, defended by the Clavicle, and Adjacent Muſcles, the Blood will nevertheleſs paſs out of the Veſſel between the Muſcles, and Neighbouring Parts. When ſuch a Miſchief is done, we ought to divide the External Integuments largely, and clear the Part of the Coagulated Blood, and apply a moderate Compreſs on the Wounded Veſſel: An Inſtance of which Practice we had once Occaſion to make in a Wound between the Pectoral, and *Deltoid* Muſcles, immediately under the *Clavicula*, where the Subclavian Vein was Wounded. In ſuch like Caſes, how can thoſe Ignorant in Anatomy, Practice without Fear and Trembling?

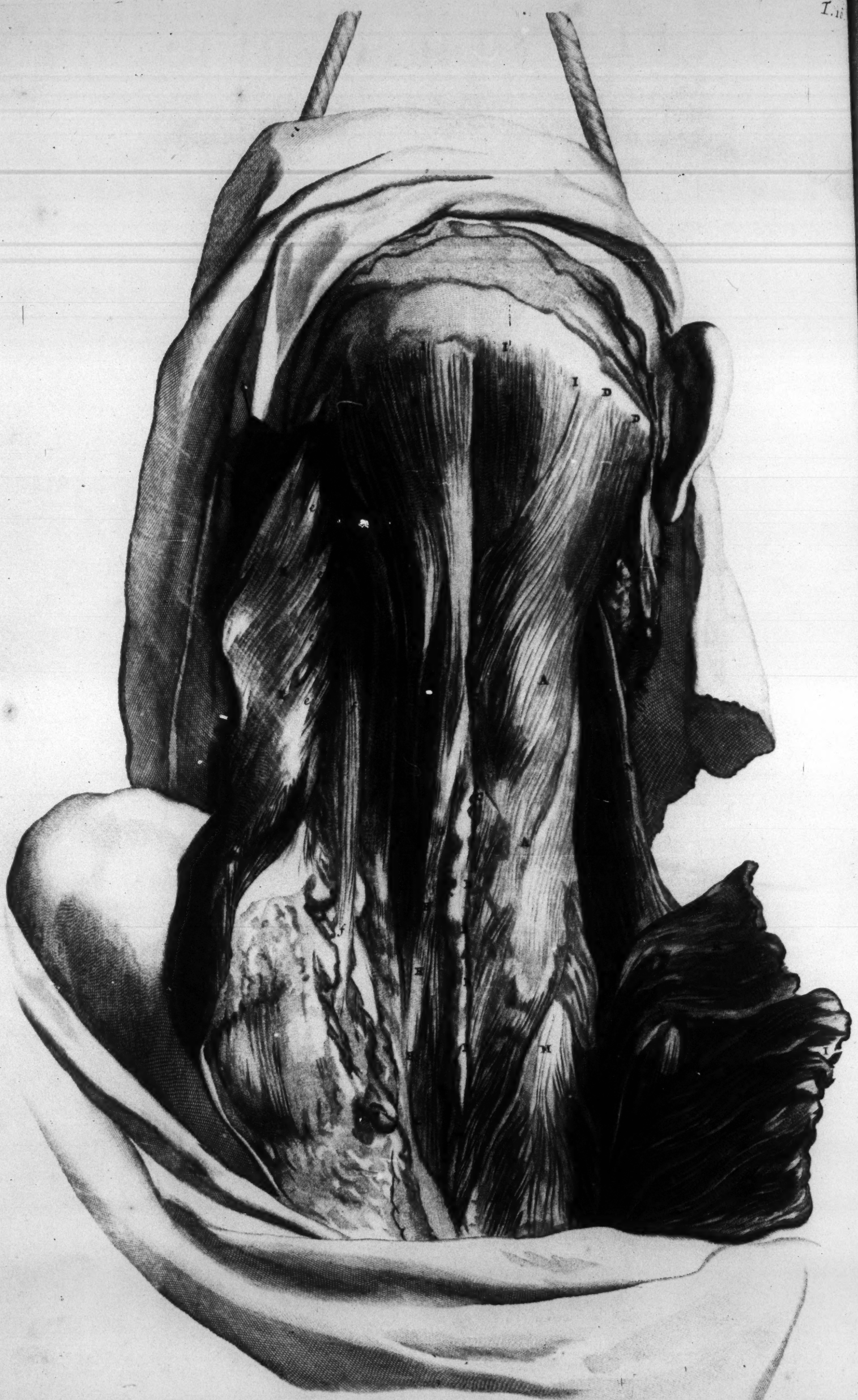
T, The *Carotid* Artery.

V, A large Vein proceeding from the *Thyroide* Gland to the *Ramus Subclavius*.

W, The *Glandula Sublingualis* lying immediately under the *Muſculus Mylohyoideus*.

Fig. 1.

Fig. 2.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THE

SIXTEENTH TABLE.

THE External Muſcles which move the Head as they appear on the Back-part; the Upper-part of the *Cucularis* being taken off, and ſome Muſcles of the Shoulder-blade, and *Thorax*, rais'd and reclined laterally.

A A, The *Muſculus Splenius in Situ*;

B B, &c. Its partly Tendinous, and partly Fleſhy Origination from the Five or Six Spines of the Superior *Vertebræ* of the *Thorax*; the Lower Part of this Muſcle appears in moſt Subjects diſtinct from its Superior, and is Inſerted to the Tranſverſe Proceſſes of the Third, Fourth, and Fifth *Vertebræ* of the Neck, as is Expreſt at e e e.

C C, &c. The Origination of the Superior Part of the *Splenius* from the Spines of the Inferior *Vertebræ* of the Neck, D D its Fleſhy Termination at the *Os Occipitis*.

E E, The *Splenius* on the Left Side raiſed, and reclined laterally;

e e e, Its Three, ſometimes Four, Tendinous Terminations inſerted to as many of the Tranſverſe Proceſſes of the Neck: Anatomiſts have erred in reckoning the *Splenii* among the Proper Muſcles of the Head, ſince they are alſo Implanted to the Tranſverſe Proceſſes of the *Vertebræ* of the Neck, wherefore they are to be eſteemed as Common to the Head, and Neck, ſo that if either of Them Acts, it draws the Head together with the *Vertebræ* of the Neck to which it's inſerted, to that Side Backwards; if they both Act, they pull the Head directly Backwards, together with thoſe *Vertebræ* of the Neck.

F G H, &c. The *Complexus Implicatus* or *Tergeminus*, on both Sides *in Situ*; the Left being laid bare;

H H, Its partly Tendinous, and partly Fleſhy Origin, from the Tranſverſe Proceſſes of the *Vertebræ* of the *Thorax*, which becomes ſtill more Fleſhy in its Aſcent F G, and is ſo inſerted to the *Os Occipitis* I I, immediatly under the Termination of the *Splenius* D D.

f f, A Part of the *Muſculus Complexus*, Inſerted to the *Proceſſus Mammiformis*, and is by *Fallopius* deſcribed as a diſtinct Muſcle; but to avoid Confuſion, and multiplying the Number of Muſcles, we have hitherto look'd on it as not perfectly diſtinct, having in ſome Subjects found it inſeparably join'd with the other Part of the *Complexus*.

Either of theſe *Complexi* Acting, draws the Head to the ſame Side Backwards; if they both Act, they draw it directly Backwards.

K, The *Serratus Superior Poſticus*, raiſed.

L, The *Rhomboides* in like manner raiſed and reclined laterally.

M, The Upper Part of the *Longiſſimus Dorſi*, and *Sacrolumbalis*.

N, The *Muſculus Levator Scapulæ*, partly appears.

THE

SEVENTEENTH TABLE.

SEVERAL Muſcles of the Head and Neck, lying under thoſe repreſented in the precedent Table.

A, The *Muſculus Rectus Major Poſticus* Diſſected from its Inſertion at the *Occiput* D, on the Left Side, and hanging down from its Origination at the Double Spine of the Second *Vertebra* of the Neck:

B, The ſame Muſcle *in Situ*, on the Right Side.

CCE, The *Rectus Minor Poſticus* on the Left Side laid bare, and remaining *in Situ*; on the Right Side it is partly hid by the *Rectus Major*.

DD, The Inſertions of the *Recti Minores* to the *Os Occipitis*; they derive their Originations from the Back-part of the Firſt *Vertebra* of the Neck, and not from any Condyliform Proceſs of that *Vertebra*, as *Bidloo* diſcribes them; the Firſt *Vertebra* of the Neck, not only wanting ſuch a Proceſs, but is conſtantly without any Proceſs in that Part, as has been taken Notice of by moſt, if not all Anatomiſts.

Thoſe *Recti Minores* pull the Head backward on the Firſt *Vertebra* of the Neck, and from their Uſe may be call'd *Renuentes* or Nodders backwards, and are Antagoniſts to a ſmall Pair of Muſcles in the Forepart of a Right Poſition alſo; to diſtinguiſh which, from theſe, we call them *Recti Minores Antici*, and *Annuentes* from their Uſe, of which, we ſhall add a Figure in our *Appendix*.

FF, The *Obliqui Inferiores*; that of the Right Side remaining *in Situ*, the Left being free'd from its Inſertion and remaining at its Origin: Either of them, ariſes from one of the Double Spinal Proceſs's of the Second *Vertebra* of the Neck, and after an Oblique Aſcent, is Inſerted to the Tranſverſe Proceſs of the Firſt *Vertebra*.

When either of theſe Inferior Oblique Muſcles Acts, it draws the Tranſverſe Proceſs of the Firſt *Vertebra* near the Spine of the Second, and the Head by Conſequence, is mov'd to the ſame Side, and is very much aſſiſted by the *Maſtoideus* on the contrary Side, of which in the following Table; If both Act, they conſpire to hold the Head more ſtable.

GH, The *Obliqui Superiores*; that of the Right Side remaining *in Situ* G; the Left being cut from its Implantation at the *Os Occipitis*, and left at its Origin at the Tranſverſe Proceſs of the Firſt *Vertebra* of the Neck: Tho' theſe Superior Oblique Muſcles perform the ſame Office with the *Recti Majores* laſt treated of, when the Head is in an Erect Poſition in pulling it directly backwards; yet in regard it is neceſſary the Head ſhould be mov'd alſo backwards, at the ſame Time it is turn'd to one Side; it is an Argument of a conſiderable Council of the Author of Nature, to add theſe and the *Recti Minores* to Act at that Time; ſince the *Recti Majores* are then ſo extended by that Rotation of the Head, that they cannot well Act.

II, An Aſperity of the Bone of the *Occiput*, where the *Muſculi Splenii* and *Complexi* Terminate.

KK, The Under Sides of the *Muſculi Complexi*, as they appear when rais'd and reclin'd laterally, the greater Part of that of the Right Side being cut off.

L, Parts of the *Longiſſimus Dorſi* and *Sacrolumbales*.

MN, The *Muſculus Spinalis Colli*; this ariſes Fleſhy from all the Tranſverſe Proceſſes of the Neck, except the Firſt and Second; and is Inſerted, after an Oblique Aſcending Progreſs, to the Inferior Margin of the Back-part of the Second *Vertebra* of the Neck, as it is here expreſt on the Right Side: This and its Partner Acting, draw the *Vertebræ* of the Neck directly backwards.

OO, The Spines of the *Vertebræ* of the Neck.

PP, The *Muſculi Interſpinales*; of which, in our *Appendix*.

Q, The *Elevator Scapulæ*.


I
H
G
K
A
L
B

THE

EIGHTEENTH TABLE.

DIVERS Muſcles of the Head and Neck, which appear in the Forepart after the Lower-Jaw, Tongue, *Larynx*, *Aſpera Arteria* and *Gula* are removed.

AA, The *Muſculi Longi Colli*, which ariſe partly Tendinous, but chiefly Fleſhy, from the Foreparts of the Five Superior *Vertebræ* of the *Thorax*, and after a Dilatation, in the Middle of their Progreſs to Fleſhy Bellies, they are inſerted, in like Manner as they begin, to the Foreparts of all the *Vertebræ* of the Neck:

Theſe may be called *Flexores Colli* from their Uſe.

BB, The Three *Scaleni in Situ*: The Firſt of theſe Muſcles ariſes Fleſhy from the Forepart of the Second, Third and Fourth Tranſverſe Proceſſes of the *Vertebræ* of the Neck, and deſcending obliquely forewards, becomes Tendinous at its Inſertion to the Firſt Rib, the Axilary Nerves paſs between this and the following: *Scalenus Secundus*, in like manner ſprings from the Second, Third, Fourth and Fifth Tranſverſe Proceſſes of the Neck, and is inſerted to the Second and ſometime Third Rib. *Scalenus Tertius*, ariſes from the ſame Tranſverſe Proceſſes with the former; as alſo from the Fifth and Sixth, and is ſoon implanted into the Firſt Rib.

II, The *Maſtoidei*, which ariſes partly Tendinous and partly Fleſhy from the Upper Part of the *Os Pectoris* or *Sternum*, and near Half the *Clavicula* M, with Two and ſometimes Three diſtinct Beginnings (as in this Subject KKK) which aſcend obliquely and joyn in Half their Progreſs; compoſing a ſomewhat round, thick, Fleſhy Muſcle, and marching over the Upper Part of the *Muſculus Elevator Scapulæ*, becomes broader again and Tendinous, at its Implantation to the Back-part of the *Proceſſus Mammillaris*, and the adjoyning Part of the *Os Occipitis*, above the Implantation of Part of the *Splenius*.

The Origin, Progreſs, and Inſertion of this Muſcle, not being duly conſidered, has led Anatomiſts into Errors concerning its Uſe: For if this Muſcle Acts on either Side, the Mammillary Proceſs on the ſame Side, is brought towards a Right Poſition with its Original at the *Sternum*, and the Head is turned to the Contrary Side; and this Action of it is commonly well expreſt by *Painters*; but ſhould it more and more contract, it will draw the Head to one Side forewards, as we ſee in Wry Necks (commonly ſo called) where one of theſe Muſcles remains contracted; but if they both Act together, the Head is rather pulled back than forewards, by howmuch their Inſertions are rather behind the Mammillary Proceſſes, than upon them; which Proceſſes are *e Diametro* oppoſite to the Articulation of the Head, with the Firſt *Vertebra* of the Neck.

LL, The *Recti Interni Majores Antici*, by ſome called *Par Rectum Internum Colli*, ſays *Bidloo*; we have elſewhere called them *Flexores Capitis* from their Uſe: They Ariſe partly Fleſhy, but chiefly Tendinous from the Fore-part of all the Tranſverſe Proceſſes of the *Vertebræ* of the Neck, except the Firſt and Second becoming Fleſhy, are Inſerted to the Anterior *Appendix* of the *Os Occipitis*, before the great *Foramen* that tranſmits the *Medulla Oblongata*.

They are imployed in Bending the Head forewards.

MM, The *Claviculæ*.

O, The *Uvula*.

PP, The Bodies of the *Vertebræ* of the Neck.

THE
NINETEENTH TABLE.

Fig. 1, 2.

ONE of the *Mammæ* or Breasts of both Sexes; some distinguish them by their Denominations, calling that of a Woman *Fig.* 1. *Mamma*, and that of a Man *Fig.* 2. *Mammilla*: We commonly call them the Breasts; but in Woman Dugs.

A A, A Portion of the Skin Rais'd and Pinn'd out, to shew its Inside.

B B, The Protuberant Parts of the Breasts of both Sexes, in which that of the Woman exceeds that of a Man.

C C, The *Papillæ*, or Nipples; the Difference in the Magnitude of which, is very Conspicuous.

D D, The *Areolæ* whose Difference is here very well Expresst between the Man and the Woman, as they appear to the naked Eye.

E E, The Glandules of the *Mamma*.

F F, The *Plexu's* of Blood-Vessels and Lactiferous Ducts lying between each Glandulous Protuberance.

G G, Divers *Sacculi Adiposi* lying on the last mentioned Vessels and Ducts between the Mammary Glandules.

H H, The Adipose Membrane Pinn'd out.

Fig. 3.

The *Papilla* and *Areola* of a Womans Breast view'd with a Microscope, and Represented Six times bigger than the Life.

A, The Head or Top of the *Papilla*.

B, Its Glandulous Membrane.

C C, The Orifices of the Lactiferous Vessels in the Top of the *Papilla*.

D D, The *Areola*.

E, Its rough Membrane. The *Areola* in Virgins is of a Pale Colour, and somewhat hard; in those with Child and give Suck, it is Brown; and in Old Women Blackish.

F, The Papillary Protuberances of the *Areola*; from each of which a Hair proceeds.

G G, Some *Vestigiæ* of the Lactiferous Tubes in their Progress from the *Mamma* thro' the *Areola* to the *Papilla*.

Fig. 4

The *Papilla* of a Womans Breast in like manner Expresst with the Assistance of a Microscope.

A A, The External Glandulous Membrane of the *Papilla*, separated and expanded.

B B, Divers Glands of the *Papilla* cleaving to its Membrane.

C C, The Lactiferous Tubes which arise from the Extremities of the Arteries within the *Mamma*, in their way to their Orifices in the Top of the *Papilla*, C C *Fig.* 3.

D D, The Glands of the *Papilla* whose Secretory Ducts discharge their Contents into the last mentioned Lactiferous Tubes.

To examine the *Papilla* or Nipple, the following Method may be Practis'd. Insert a Blow-Pipe into one of the largest of the Lactiferous Tubes on the Top of the Nipple C C, *Fig.* 3. and after making a straight Ligature on the Nipple and Blow-Pipe, you may Blow up all the Lactiferous Tubes of the *Mamma*, thro' their Communications with each other, before they approach the Nipple Figur'd by *Nuck Adenog. Curiosa*, Fig. 11. Fol. 15. All the Lactiferous Tubes of the *Mamma* being thus extended with Wind; those Parts of Them which help to compose the *Papilla* (C C;) together with their Extremities within the Glands D D, being very much extended; make a straight Ligature on the Inferior Part of the Nipple next the Breast, then cut off the Nipple from the Breast and Dry it, and afterwards by cutting it Variously, you may easily examine its Structure: By these means the Nipple appears to be compos'd of a Double Series of Fibres; the one somewhat Large, the other Less; both of a Net-like Disposition, being full of Perforations of divers Forms; the like of which is not to be found in other Parts of the Body, says *Nuck* in his Tract above mention'd; to this add a vast Number of Blood-Vessels which every where adorn the *Papilla*: Hence an Account may be given how the Nipples strut out, and are so extended in Nurses, and on the contrary so Limp in those who discontinue giving Suck.

I could never discover any Valves in the Lactiferous Vessels of the *Mammæ* of Women, which some describe; tho' I have made Injections of divers Liquors, and sometimes Mercury into them; the like has been done by the Accurate *Nuck*, who, with what I have frequently observ'd, also takes Notice that the Mercury so Injected passes into the Blood-Vessels of the *Mamma*, especially its Arteries. But our last nam'd Author takes Notice of divers Straitnesses in the Lactiferous Vessels, occasion'd, as He suspects, by divers fatty hard Substances compressing Them, even to that Degree, that if their contain'd Milk becomes a little Thickned, it there stops thro' the Narrowness of the Duct, or requiring a longer Stay, it becomes so Vitiated as to Affect the Breast variously, especially with what are commonly call'd Milky Tumors; in which Case an Abscess succeeds, and the Milky Tubes break and discharge their Contents with the *Pus*. The Milk by these means flowing at the Ulcer, frequently proves troublesome, and hinders its Cicatrice or Closing, as it happen'd in the Case of a Patient I not long since had under my Care, who at the same Time was infected with the Itch, in whom the Milk flow'd from the Ulcer for at least Three Months; nor could I find any tollerable Abatement of the Milky Flux, notwithstanding her dry Diet, and Drinking of a Decoction of *Sarsa*, *China*, *Guaiacum*, &c. till she had taken proper Remedies for the Itch.

The Expert *Nuck* takes Notice that the Lactiferous Tubes, tho' very Capacious in the *Mamma*, yet are Straitned at their Orifices in the *Papilla*, insomuch, that a Bristle of the smallest Size will not enter them: This Contrivance, He adds, is very necessary, least the separated Milk contain'd in the Tubes should be continually apt to run out, and that it should be only so retain'd, that the Nipple of the Mother when Suckt by the Infant may easily void it: This Structure is very evident in the Tets of Quadrupedes, especially where their pendulous Position renders this Contrivance very necessary; yet when the Lactiferous Tubes are fill'd with Milk, it is apt to run out.

Fig. 5.

The Inferior and Internal Part of the *Areola* and *Basis* of the *Papilla* after Dissection from the *Mamma*.

A A, The Circumference of the *Areola* next the *Mamma*.

B B, The Mammary Glands plac'd under the *Areola*.

C C, The Lactiferous Tubes in their way to the Nipple.

The Arteries which convey Blood to the *Mamma*, are many small Branches, Springing from the Mammary and Intercostal Arteries; of these I told Six, which afforded a Flux of Blood without Pulsation in taking off a Schirrous Breast. Here I cannot omit recommending to Practitioners of Surgery the Tying of these Arteries; the doing of which is so easie, that it is hardly possible for One tollerably acquainted with the same Practice in taking off of Limbs, to be at a loss in this. The Trunks of these Arteries Arising from the Mammary and Intercostal Arteries, are very small, as they pass between the Pectoral Muscle and *Mamma*, as appears from the Blood not having any Pulsation as it flows from them when divided in Living Bodies, except the Breast which was taken off is much Tumified. You must not expect to fill them with Wax by Injecting into the *Aorta*; because you are oblig'd to raise the *Sternum* in order to Practice that Operation; whereby you cut off their Communication with the large Mammary Artery adjacent to the *Sternum*; nor do's Wax commonly pass the Intercostal Arteries so far as to reach these. The Veins of the *Mamma* are Numerous, and pass on the Outside of the *Mamma* under the Skin only, and are very Conspicuous in those who give Suck, or have had Children: These Arise, or are continued from the Extremities of the Arteries and composing many large Trunks which discharge their Blood into the Mammary and Intercostal Veins; some pass up to the Subclavian Vein. The Nerves are commonly said to Arise from the Thoracick Nerves, and pass thro' the Intercostal and Pectoral Muscles to the *Mamma*: I must confess I never yet trac'd Them, nor do's *Vieussenius* Figure Them; but in his XXIV. Table Expresses Two Branches U, X, Arising from the Sixth and Seventh Nerves of the Neck composing one Trunk, which descends and gives Branches to the *Musculi Serratus minor anticus*, *Pectoralis*, *Serratus major anticus*, and to the Coverings of those Muscles: From the same Nervous Stock I am apt to think may also Spring some Branches passing to the *Mamma*, whence those painful Communications between the *Mamma* and *Axilla* may proceed. Besides these Vessels the Lymphe-Ducts of the *Mamma* are also mention'd; I must confess I never yet saw these Ducts Arising from the *Mamma*, yet I can't doubt of their Existence on that Part, when I reflect on what Use they are of in General, in the Animal *Oeconomy*, of which elsewere. The Communication between the Lactiferous Tubes and Blood-Vessels, is demonstrated in the above mention'd Experiment, by Injecting Mercury into the Former, and its Running out again by the Later. The Opinion that the Chyle is transmitted to the *Mamma* immediately from the Thoracick Duct is now altogether Exploded, and the last mention'd Experiment seems to evince the Milk to be deriv'd immediately from the Blood within the *Mamma*. It is evident, the Milk is not Transparent like other Liquors separated from the Blood, as the *Saliva*, *Urine*, *Bile*, &c. but by a Microscope it appears compos'd of Globules not unlike those of the Blood, except that the Globules of the Blood are somewhat larger than those of Milk.

THE

Fig. 1

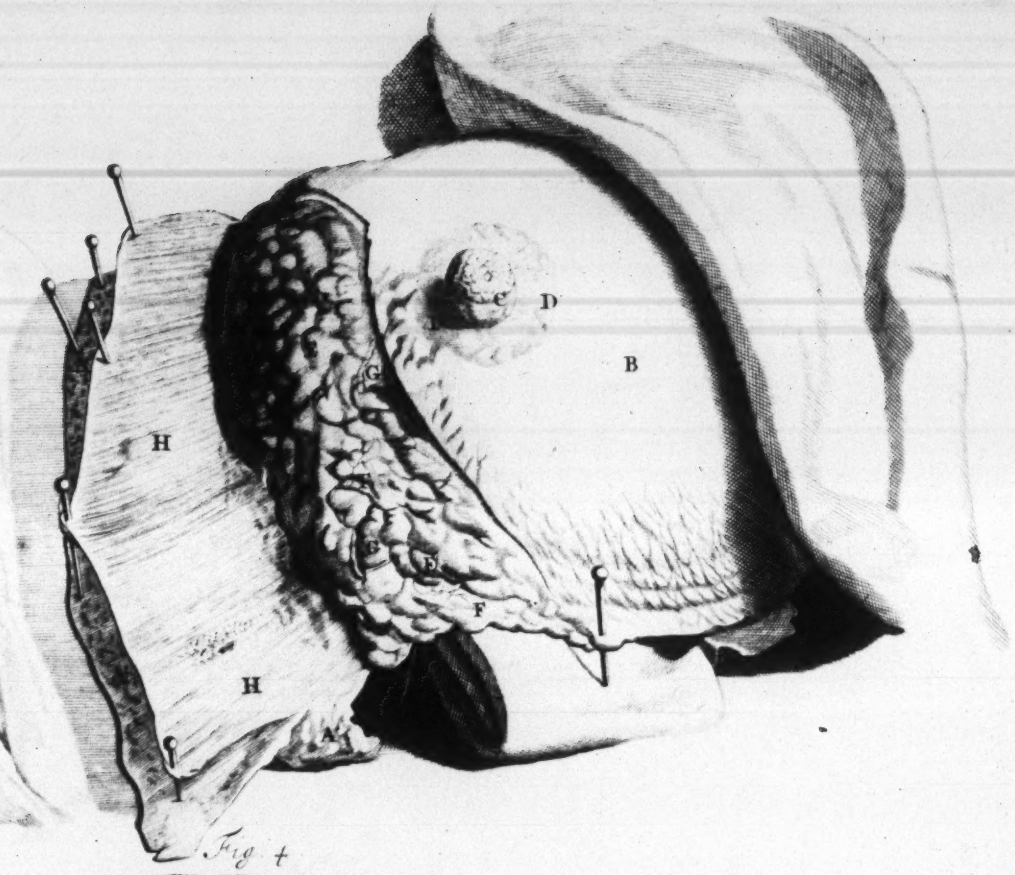


Fig. 2

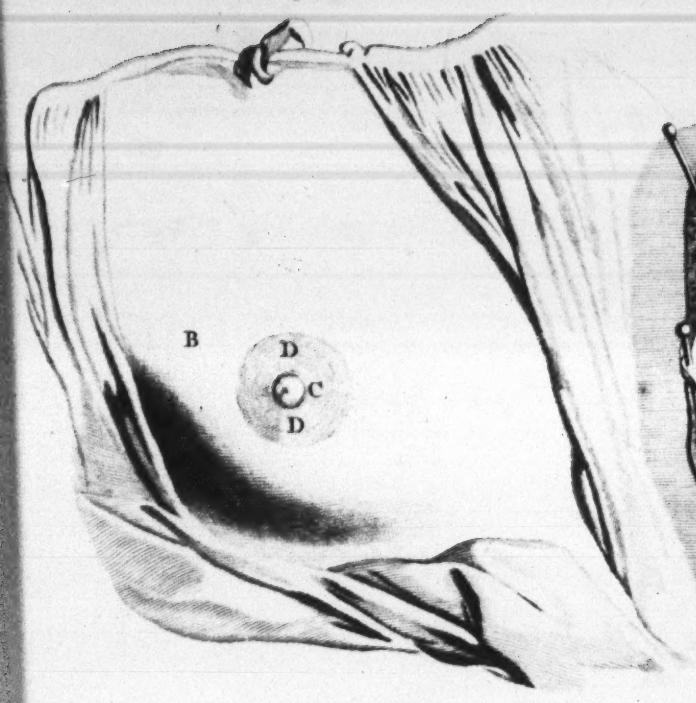


Fig. 4

Fig. 5

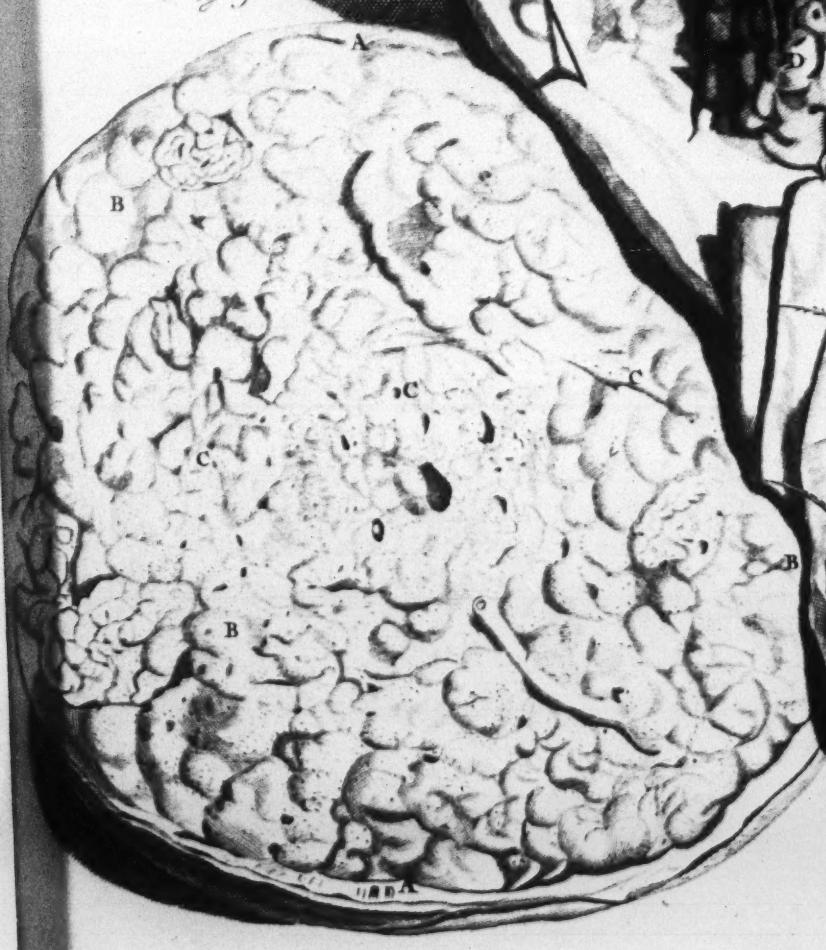
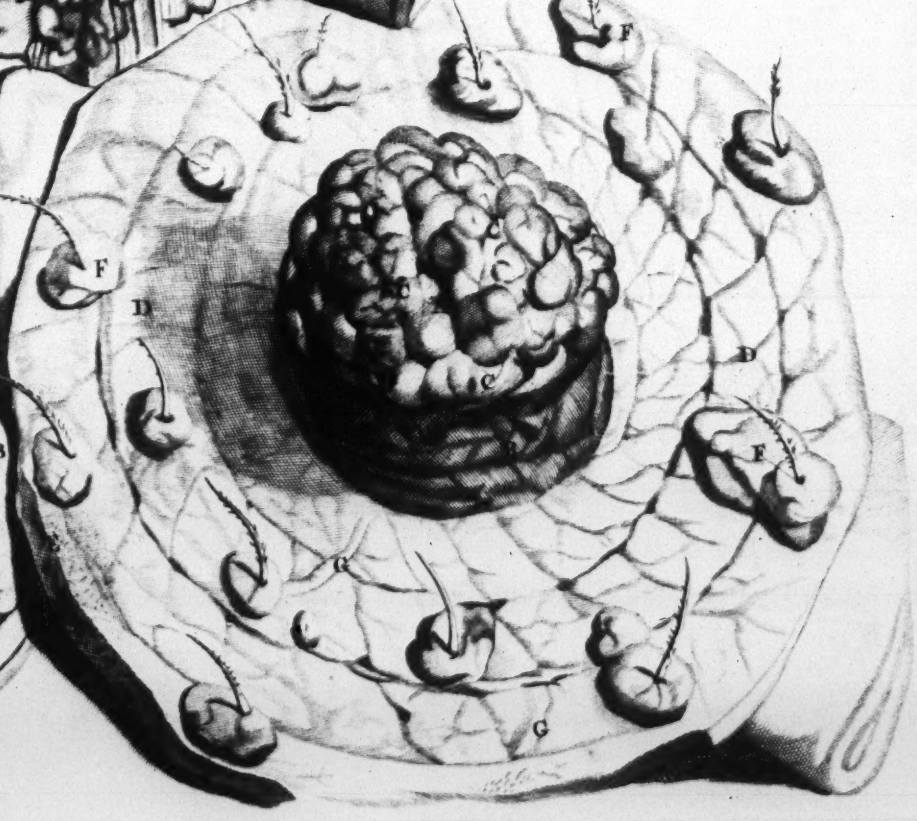


Fig. 3



T. 20

THE

TWENTIETH TABLE.

DIVERS Muſcles on the Superior and Fore-Part of the Trunk of the Body.

A, The *Muſculus Subclavius in Situ*; when free'd from the Trunk of the Body and left to the *Clavicula*; (ſee *Tab.* 66. P.) It ariſeth Fleſhy from the Inferior Part of Half the *Clavicula* next its Connexion to the *Spina Scapulæ*, whence its Fibres Deſcend Obliquely Forewards, to its partly Tendinous and partly Fleſhy Implantation at the Superior Part of the Firſt Rib next the *Sternum*.

The Office of this Subclavian Muſcle is to draw up the Firſt Rib, and conſequently the reſt in Inſpiration.

B, Part of the *Clavicula* on the Right Side.

C, The Cartilaginous Ending of the Firſt Rib at the *Sternum*.

DD, The *Muſculus Serratus Major Anticus in Situ* on the Left Side; It ariſeth Broad and Fleſhy from the whole *Baſis Scapulæ*, *Tab.* 65. GG, and running on the *Subſcapularis Tab. ib.* E, becomes broader and thicker as it paſſes Forewards to its Fleſhy Inſertions at the Eight Superior Ribs Laterally EE &c. by divers diſtinct Portions by ſome called *Digituli*; of which, the Three Inferior, are Indented with the *Muſculus Obliquus Deſcendens Abdominis*, as is here Expreſt on the Left Side; on the Right Side the *Serratus Major Anticus* EF is raiſed.

G, Part of the *Obliquus Deſcendens* on the Left Side Indented with the laſt mentioned *Serratus*.

H, The *Pectoralis in Situ*, on the Left Side; this Muſcle has a Broad Semicircular Fleſhy Beginning; above from near Half the Inferior Part of the *Clavicula* B; below from the *Os Pectoris* L, and all the Cartilaginous Endings of the Six Superior Ribs M M, and from the Bony Part of the Seventh Rib, it hath ſometimes a diſtinct *Faſciculus* of Fleſhy Fibres which I have frequently ſeen Confounded with the *Obliquus Deſcendens*; hence it paſſeth Tranſverſely over the Upper-Part of the *Biceps Cubiti*, where it is made into a ſhort and broad ſtrong Tendon Inſerted to the Superior and External Part of the *Os Humeri*, above the Termination of the *Deltoides*.

I, The Right Pectoral Muſcle rais'd, where the Decuſſation of its Fibres near its Inſertion is well Expreſt: This croſſing of its Fibres is a Contrivance in Nature to render its Action more Vigorous; the Fibres of its Upper-Part Deſcending to the Lower-Part of its Implantation to the *Os Humeri*, and thoſe of its Lower-Part Aſcend to the Superior; croſſing each other with Acute Angles. This Muſcle is call'd *Adductor Humeri*; when it Acts, it moves the Arm variouſly according to the Operation of its ſeveral *Series* of Fibres.

K, The *Serratus Minor Anticus*, raiſed from its Implantation at the Bony Parts of the Second, Third, Fourth and Fifth Ribs, and left at its Origin at the *Proceſſus Carocoides Scapulæ*.

L, The *Os Pectoris* or *Sternum*.

MM, The Cartilaginous Endings of the Superior Ribs Connexed to the *Sternum*.

NN, The *Deltoides*. *Vide Tab.* 66. XX.

OO, The Superior Parts of the *Recti Abdominis*. *Vide Tab.* 32, *Fig.* 1. NO, &c.

P, Part of the *Coracobrachialis*. *Vide Tab.* 65. F.

Q, Part of the *Biceps Cubiti*. *Tab. ib.* 1.

THE
TWENTY-FIRST TABLE.

SHEWS the *Sternum* Rais'd, and the Principal Organs contain'd in the *Thorax* partly in View.

A, The Inner-Face of the *Sternum* or *Os Pectoris*.

BB, The Cartilages of the True Ribs, cut from the Bony Extremities of the Ribs, and left at their Connexions to the *Sternum*: Upon these Cartilages are plac'd the *Musculi Triangulares*; which Muscles Arise from the Inferior and Internal Part of the *Sternum*, and after an Oblique Progress are inserted to the Bony Endings of the Fourth, Fifth, Sixth, and sometimes Seventh, and Eight Ribs. These Triangular Muscles scarcely appear in Macilent Subjects, as is Express't in this Figure.

C, The *Mediastinum* free'd from the *Os Pectoris*, where, in Humane Bodies it appears Double, being a Continuation of the *Pleura* from both Sides the Internal Part of the *Thorax*; whence it Descends and firmly Cleaves to the *Pericardium*, dividing the *Thorax* into Two Cavities, and the Right Lobes of the Lungs from the Left: In this Progress of the *Mediastinum* it parts with One of its *Lamina* to cover the large Blood-Vessels within the *Thorax*. A Triangular Interstice is fram'd immediately under the *Sternum* at the Approach of the *Pleura*, from each Side as it Descends to compose the *Mediastinum*: Nor is this Interstice an empty Space as it is commonly suppos'd, but is interwoven with various Orders of Fibres, framing *Loculi* or little Cells. *Real. Columbus* Lib. XI. Cap. III. Proposes the letting out of *Pus*, collected in this Interstice by Perforating the *Sternum*. As the Fore-part of the *Mediastinum* plainly appears a Continuation of the *Pleura*; so its Back-part is evidently a Continuation of the same Membrane, as it advances towards the *Vertebræ* of the Back. In Dissecting a Morbid Body, I found the Right Side of the Cavity of the *Thorax* so extended with a Serous Humor, as its External Appearance, (especially at the Cartilaginous Endings of the True Ribs,) was Prominent: Nor would the least Portion of the Lungs on the same Side Swim in common Water, but Sunk to the Bottom of the Vessel: In this Subject I could not find any Part of the Hydropick or Serous Humor in the other Side of the *Thorax*; but the Lungs on that Side in no very ill State. By this, we may be assur'd that the *Mediastinum* adequately divides the Right Side of the *Thorax* from the Left. The *Mediastinum* also supports the *Pericardium*, least its Flaccidity impede the *Systole* of the Heart, and sustains the Trunks of the Nerves of the *Par Vagum* in their Progress thro' the *Thorax*. The Diaphragm is also said to be suspended by the *Mediastinum*, least the Liver, to whose Lower-Side it's Connexed, should become Insupportable. The *Mediastinum* receives Arteries from the Mammary and Intercostal Branches; it has Two large Veins which discharge their Blood into the Subclavian and Neighbouring Trunks: Its Nerves are said to Spring from the Eighth Pair. The Lymphe-Ducts of the *Mediastinum* pass towards the *Thymus*.

DD, The *Pericardium* or *Capsula Cordis* Open'd and Pinn'd up. The *Pericardium* Arises from the large Vessels at the *Basis* of the Heart, and seems to be compos'd of a Continuation of the *Pleura* or *Mediastinum*. It adheres to the Diaphragm below, and laterally to the *Mediastinum*. It has Blood-Vessels from the Diaphragm and Mammary-Vessels, according to the Accurate *Ruysch* in his lately publish'd Epistles: The Capillary Extremities of these Blood-Vessels are very Numerous, as will appear when Injected with Mercury. There are divers Lymphe-Ducts on the *Pericardium*, which convey the *Lympha* to the Thoracick-Duct. The Glands, which are in the *Pericardium* and at the *Basis* of the Heart, which separate that Humor imploy'd in Moistening the Inside of that Membrane and Surface of the Heart, are not to be discover'd by the naked Eye in ordinary Dissections; no more than those on the Inside of the *Peritoneum* and Surface of the Intestines, which afford a Humor to Lubricate those Parts; but when either of these Parts are Diseased so that those Glands are Affected, their Existence then is Demonstrable; as appear'd in the *Pericardium* of an Infant I lately Dissected, where the Neighbouring Parts and *Pericardium* its self were Apostumated. In the *Pericardium* of this Subject we found Two or Three Ounces of Purulent Matter in place of the Serous Humor; and the External Membrane of the Heart so loosned, as its Surface appear'd Villous; nor did any Fat appear on the *Basis* of the Heart. In an Adult Person who Died suddenly I found the *Pericardium* somewhat Thickned and no Humor contain'd in it; but in Two, or Three Places cleaving to the Heart especially near its *Basis*, and the Heart it self intirely cover'd with Fat; The Use of the *Pericardium* is to defend the Heart in its *Systole* from the Neighbouring Parts, and to contain a Humor to Moisten the External Surface of the Heart.

E, The Heart lying within the *Pericardium*.

FF, Parts of the Lungs on both Sides the *Thorax in Situ*.

G, The *Thymus in Situ*. The Magnitude of the *Thymus* varies according to the Age of the Body; in a *Fœtus* Two Months after Conception it is larger in Proportion to the Bulk of the Body than in One of Five or Six Months: In a *Fœtus* of Nine Months it almost fills the Interstice which the Lungs after the Birth begin to take up in the Upper-part of the *Thorax*. The *Thymus* after the Birth gradually decreases, except the Upper-part of the Cavity in the *Thorax* is Capacious enough for its Reception, as appear'd in an Anatomical Subject I lately Dissected of Thirty Years of Age, in whom the *Thymus* was very large: I must confess I never yet met with a Subject, tho' never so Old, in whom the *Thymus* was wanting. In those Bodies the *Thymus* is less than ordinary, we find the Subclavian Glands, those of the Internal Jugular Veins, and the *Glandulæ Thyroideæ* larger; as they lately appear'd in a Boy of about Eight Years of Age. In Women the *Thymus* and Thyroid Glands are larger than in Men, but the Subclavian Glands are less; by reason the *Clavicula* in Women are straight and shorter than those of Men; whence a much less Interstice is fram'd for entertaining those Glands. I have more than once found the Lymphe-Ducts fill'd with Wax, which Arise from the *Thymus*, and empty themselves into the Upper-part of the Thoracick-Duct; by Injecting that Duct by the *Vesica Chyli*: See *App. Fig.* 12. D.

From what has been abovesaid, it appears the *Thymus* bears a Proportion to the Head; whether in the *Fœtus* or in Bodies before they become Adult, which we conceive, is in order to receive a Proportionable Quantity of *Lympha*, deriv'd from thence: And as the Subclavian Glands of Women are less than those of Men; so the Thyroide Glands and *Thymus* are larger: Hence also it appears the *Thymus* is a Lymphatick Gland, and Varies its Magnitude according to the Quantity of the *Lympha*, that is necessarily transmitted thro' it from the Superior Parts; or as the Neighbouring Lymphatick Glands do more or less transmit their *Lympha* to it: Besides this common Office of the *Thymus*, whether in the *Fœtus* or Adult; it has another Use which was first suggested to Me by Injecting a Liquid into the Thoracick-Duct; when finding it not only fill the Lymphe-Ducts of the *Thymus*, but the *Thymus* it self was Extended with it: The like Observation, I since found, was made by the Expert Anatomist Dr. *Tyson*, some Time since; whence I conceive, the *Thymus* and its Lymphe-Ducts are *Diverticula* to the Chyle, when too great a Quantity is pressing forewards towards the Subclavian Vein. I know it may be Objected that the Valves of the Lymphe-Ducts oppose this contrary Course of Liquors in them; but repeated Observations convince me, that not only these Lymphe-Ducts of the *Thymus*, which are large and have very few if any Valves, (as appears by their being Injected with Wax) but those of the Loins, and their Glands from whence they Arise, are frequently fill'd with Chyle, when no Compress is made on the Thoracick-Duct. Hence it is, a Milky Liquor has been commonly found in the *Thymus*, but more frequent in that of a *Fœtus* than in an Adult; and that not only because the *Thymus* and its Lymphe-Ducts are much larger Proportionably in the former State or *Fœtus*, but the bended Position of the Thoracick-Duct of the *Fœtus in Utero*, renders the Ascent of the Chyle by that Duct more liable to Regurgitate by the Lymphe-Ducts of the *Thymus*.

HH, The Fore-part of the *Diaphragma* free'd from the Cartilaginous Endings of the Ribs, and Pinn'd up.


D
L
H

Fig. 4.

Fig. 2.

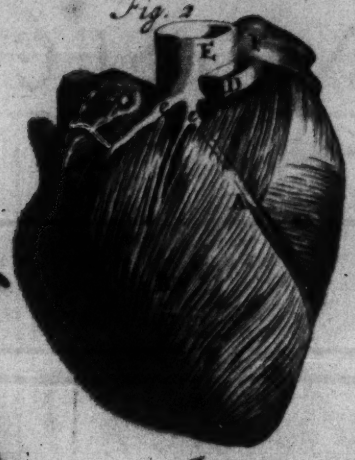


Fig. 3.

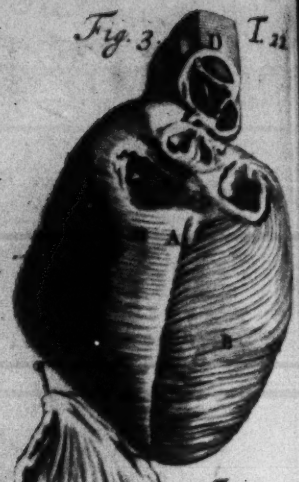


Fig. 13.

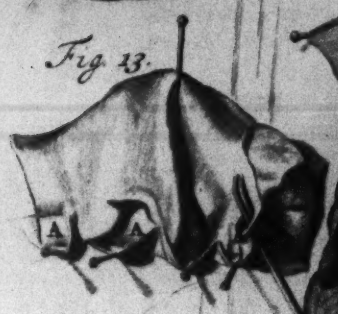


Fig. 1.

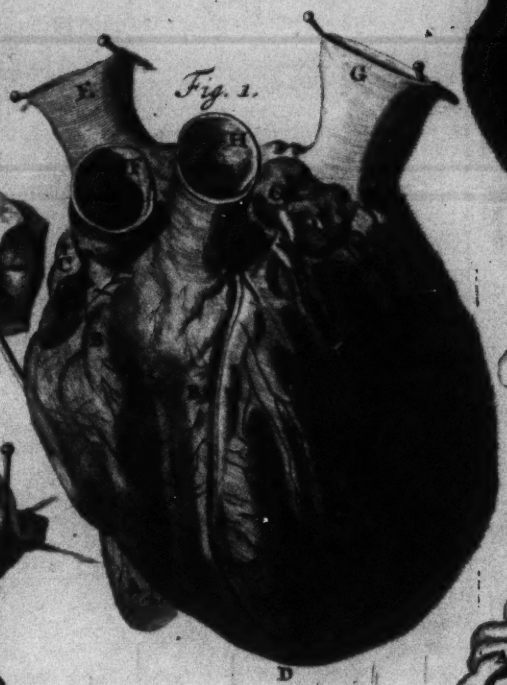


Fig. 14.

Fig. 6.

Fig. 10.

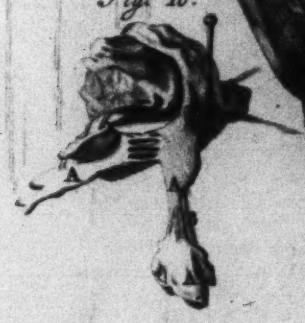


Fig. 11.

Fig. 12.

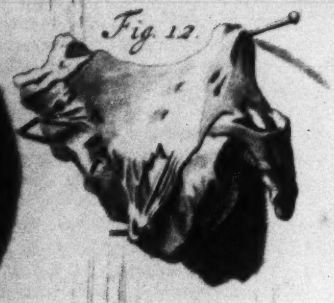


Fig. 5

Fig. 7.

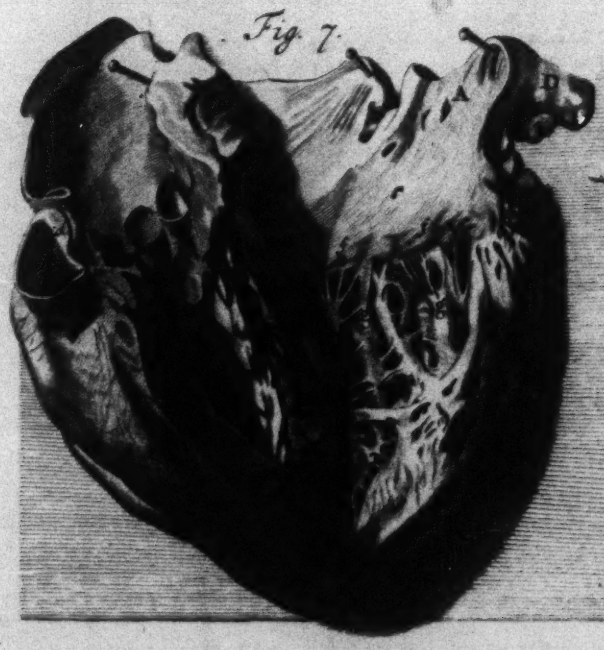


Fig. 8.

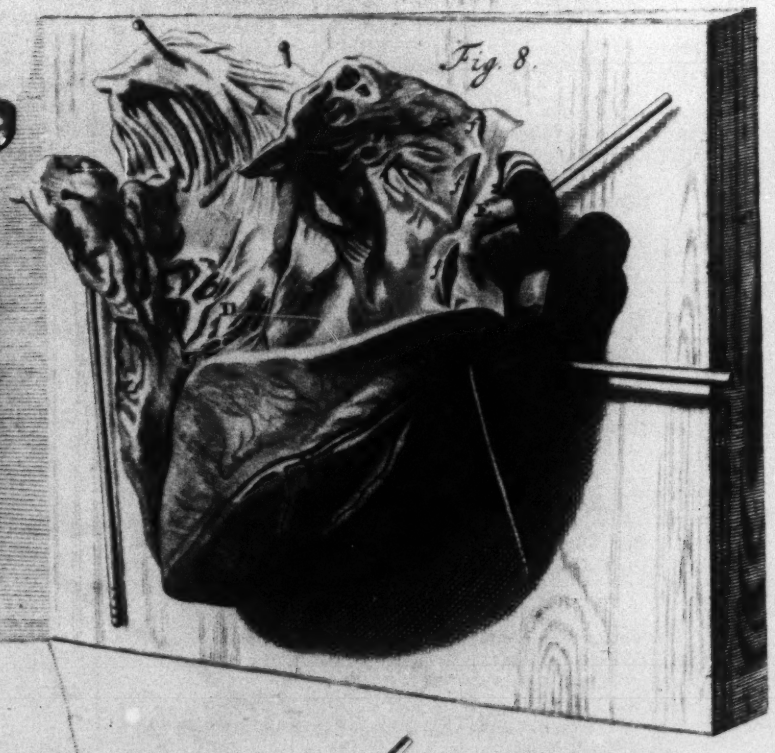


Fig. 9.

THE
TWENTY-SECOND TABLE.

Fig. 1.

THE Heart with Parts of the Trunks of the great Veins and Arteries cut off.

A A, The proper Membrane of the Heart; a Portion of which is Rais'd and hangs Down.

B B, The Left Side of the Heart, adorn'd with its Coronary Veſſels.

C ♀, Part of the Right Auricle of the Heart.

C, The Left Auricle on the *Baſis* of the Heart.

D, The Cone of the Heart.

E, The *Vena Cava* which conveys the Refluent Blood from the whole Field of the Body into the Right Auricle of the Heart, when the Heart is in *Syſtole*; whence the Blood is again tranſmitted into the Right Ventricle of the Heart when it is in *Diaſtole*: So that when the Auricles of the Heart are in *Diaſtole* or Relaxation, they are fill'd with Blood, and the Heart it ſelf is in *Syſtole* or Contraction, and *Vice verſa* when the Heart is in *Diaſtole*, the Auricles are in *Syſtole*.

F, The *Arteria Pulmonalis* or *Vena Arterioſa* which carries the Blood from the Right Ventricle of the Heart into the Lungs.

G, The *Vena Pulmonica* or *Arteria Venoſa* which conveys the Refluent Blood from the Lungs into the Left Auricle and Ventricle of the Heart, not unlike the *Vena Cava*, &c.

H, The *Arteria Magna* Ariſing out of the Left Ventricle, which conveys the Maſs of Blood from the Heart thro' the Field of the Body; from whoſe capillary Extremities the Veins are continued, as appears by a Microſcope in the tranſparent Parts of living Animals: See *App. Fig.* 4. and 5.

Fig. 2.

The Heart diveſted of its External Membrane and Carnous Fibres after Boyling; ſo that the Diſpoſition of the Subjacent Fibres may appear. The way of preparing the Heart to exhibit this Diſpoſition of its Fibres, may be practis'd after the following Manner. The Heart with Portions of the Trunks of the large Blood-Veſſels being taken off; the Blood as well within its Ventricles as Blood-Veſſels being evacuated, then with Tow, or Pieces of Rags, fill the Ventricles, Auricles, and large Veſſels on the *Baſis* of the Heart; the Mouths of the large Blood-Veſſels being ſtitch'd up, leaſt their Contents ſhould be Extruded by the Contraction of the Heart in Boyling. This done, Boyl it according to its Bulk; if it is the Heart of an Ox, *&c.* Boyl it Four or Five Hours; if of a Man, One or Two.

N. B. *This Figure is Printed reverſt.*

A, A *Sinus* plac'd between both Ventricles, in which a large Trunk of one of the Coronary Arteries is convey'd.

B, The Cochleated or Oblique deſcending Order of Fibres of the Left Ventricle of the Heart.

C, The External and Oblique deſcending Order of Fibres of the Right Ventricle; which decuſſate the former or Subjacent Fibres in Acute Angles.

D, Part of the *Arteria Pulmonalis*.

E, The *Aorta*.

e e, The Trunks of the Coronary Arteries.

F, The Right Auricle.

G, The Left.

Fig. 3.

A, The *Sinus* above mention'd between the Ventricles.

B, The Tortuous Diſpoſition of the Fibres of the Right Ventricle.

C, Thoſe of the Left.

The Heart conſiſts chiefly of divers *Strata* of Oblique deſcending Fibres; the External paſſing more ſtraight or leſs Contorted than the Internal; whence it happens that the External Fibres are ſeen to Decuſſate the Internal with Acute Angles; the former Ariſing from the *Baſis* of the Heart at the Roots of the Blood-Veſſels, and End in the Cone; the later Ariſe from the ſame Place, and Terminate either in the *Parietes* of the Ventricles or *Columnæ Carneæ* Fig. 7. g g, from which divers Tendinous Filaments are continued to the Lower-parts of the Tricuſpid and Mitral Valves.

D, The *Aorta* divided between its Origin from the Heart and Valves, and reclin'd to One Side, hanging by its Two Coronary Arteries; Expreſt *Fig.* 2. e e.

e e, The Three Semilunary Valves of the *Aorta*, which hinder a Return of the Blood into the Left Ventricle, when the Heart is in *Diaſtole*.

Fig. 4.

The Concourſe of Fibres near the Cone of the Heart, as they appear after a Tranſverſe Section.

Fig. 5.

Some *Faſciculi* of Fibres of the Left Ventricle of the Heart.

A B, The Two Tendinous Extremities of the Oblique Fleſhy Fibres, Expreſt *Fig.* 2, 3.

C, The Fleſhy Parts of the Fibres between the Two Tendons.

D, The Collateral Fibres which appear in dividing the laſt mention'd *Faſciculi*: Nor are theſe any other than Parts of the Fibres of the divided *Faſciculus*, and lay Parallel to each other according to their length. The Blood-Veſſels and Nerves paſſing between theſe Fibres make a Reticular Appearance, when divided, as here Expreſt.

Fig. 6.

The Right Auricle, and Part of the *Baſis* of the Heart.

A A, The Right Auricle expanded.

B B B, The Three Tricuſpid Valves; Two of which, are extended by Pinning out their Tendons, deriv'd from the *Columnæ Carneæ*: See *Fig.* 7. g g, *Fig.* 10. A, *Inferior*. The Office of the Auricles is to receive Part of the Refluent Blood whilſt the Heart is in *Syſtole*, and to diſcharge that Blood again into the Ventricles of the Heart when it is in *Diaſtole*, ſo that the Auricles of the Heart ſeem as *Diverticula* to the Blood in its paſſing into its Ventricles; elſe a Repercuſſion of the Blood in the Veins would neceſſarily happen in the *Syſtole* of the Heart; which would prevent the regular Influx of the Blood to the Ventricles.

Fig. 7.

The Heart with its Left Ventricle Open'd.

A, The Inſide of the *Vena Pulmonalis*.

B, The *Aorta* in like manner Open'd.

C C, The *Septum Cordis*, which divides the Right Ventricle from the Left.

D, The Left Auricle intire which in Humane Bodies is very little, as appears by this Figure; and the Trunk of the Pulmonick Vein very large.

d, The Trunk of the *Arteria Pulmonica* cut off.

e e, Two of the Three Semilunary Valves at the Beginning of the *Arteria Magna*; which hinder the Reflux of the Blood when the Heart is in *Diaſtole*; in which Action they are Expreſt, *Fig.* 3. e e.

f f, The Two Mitral Valves in the Pulmonick Vein, which prevent the Blood repaſſing that Veſſel when the Heart is in *Syſtole*.

g g, The *Carneæ Columnæ* compos'd of Muſcular Fibres, deriv'd from thoſe of the Sides of the Heart, whence divers ſmall Tendinous Filaments do Ariſe, and are faſtned to the Inferior *Limbus* of the Mitral Valves; by which means thoſe Valves are drawn down towards the Cone of the Heart, and prevent the Blood from paſſing out again that way when the Heart is in *Syſtole*. I know Dr. *Lower* in his Accurate Book *De Corde*, Suppoſes that theſe Mitral and Tricuſpid Valves are Relax'd in the *Syſtole* of the Heart, and by their Riſing up ſtop up the Paſſages of the Veins: But if the Structure of the Heart and theſe Parts are Attentively conſider'd in a large Animal, as in an Ox, *&c.* it will appear reaſonable to conceive that theſe Mitral and Tricuſpid Valves are rather drawn down than ſuffer Extruſion upwards: nor need Nature have been at any trouble in making thoſe Valves at the Orifices of the Veins, any otherwiſe than the Reverſe of the Semilunary Valves of Arteries; if as the Expert *Dr. Lower* Suppoſes they are driven up and Extended like a Sail with Wind when the Heart is in *Syſtole*; but by faſtening thoſe Tendinous Fibres to the Lower-parts of thoſe Tricuſpid and Mitral Valves; which, are of a Conical Figure, ſeems to me to be an Argument that they cannot ſuffer ſuch Extenſion upwards, without letting ſome Part of the Blood repaſs them in the *Syſtole* of the Heart: Beſides there muſt conſtantly a conſiderable Part of the Blood remain in the Ventricles of the Heart, if thoſe Valves are ſo diſpos'd in its *Syſtole*; which I think the *Dr.* himſelf ſeems no where to conceive; but on the contrary the Ventricles of the Heart are with great Strength adequately Compreſt in it's *Syſtole*, for which End the Inſides of its Ventricles are compos'd of divers Fleſhy Columns; between which divers *Interſticia* neceſſarily Reſult, (that are elegantly Expreſt in this Figure,) by which means, the Ventricles are more exactly Cloſed in their *Syſtole*, than they could have been, had they been ſmooth.

Fig. 8.

The Heart with its Right Ventricle Open'd.

A, The Inſide of the Right Auricle of the Heart as it appears when Open'd and Pinn'd out.

B, The Left Auricle Intire.

C, The Coronary Blood-Veſſels of the Heart; from theſe, particularly from the Arteries, Spring thoſe of the Auricles and large Blood-Veſſels of the Heart; as the Accurate *Ruyſch* deſcribes them in his *Anatomical Epiſtles* Pag. 15. The Nerves of the Heart Spring from the Eighth Pair and Intercoſtal Nerves; a particular Deſcription of which, may be found in Dr. *Lower's* Book *De Corde*, and *Vieuſſenius Nevvographia*.

D, Part of the Right Ventricle of the Heart Open'd.

E, A Portion of the *Vena Arterioſa* or *Arteria Pulmonalis* Divided and Expanded.

f f f, The Three *Valvulæ Sigmoides* or *Semilunares*, which oppoſe the Return of the Blood from the Lungs, by the *Arteria Pulmonica* into the Heart, when it is in *Diaſtole*.

Fig. 9.

A A, The Heart cut Tranſverſely.

B, That Part of it next its *Baſis*.

C, That next its Cone.

D D, The Right Ventricle of the Heart.

E, The Left ——

F, The *Septum Cordis* or the Partition between the Two Ventricles of the Heart.

G G, A *Stylus* put thro' the *Vena Cava* into the Right Ventricle of the Heart.

H H, Another paſſing from the ſame Ventricle thro' the *Arteria Pulmonalis*.

I I, A *Stylus* in the Left Ventricle of the Heart paſſing out at the *Arteria Magna*;

K K, Another Inſerted into the ſame Ventricle, by the *Vena Pulmonica*.

Fig. 10.

A, *Inferior*, A Portion of the *Columna Carnis* of One of the Ventricles of the Heart cut off: See *Fig.* 7. g g, *in Situ*.

B, The Tendinous Fibres deriv'd from the Fleſhy Column, and faſtned to the Inferior Margin of One of the Tricuſpid Valves.

A A, *Superior*, Portions of the Tricuſpid Valves.

Fig. 11.

The Coronary Blood-Veſſels of the Heart as they appear on its Surface when Injected, after Drying the whole Heart.

A A, The Arteries fill'd with Mercury fix'd with Tin.

B B, The Veins Extended with Wax.

Fig. 12.

A Portion of the *Vena Pulmonalis* next the *Baſis* of the Heart.

A A, Parts of the Mitral Valves Pinn'd out by their Tendons.

Fig. 13.

The Inner Surface of a Portion of the *Arteria Magna* cut off at the *Baſis* of the Heart when Divided and Expanded.

A A A A, The Three Semilunary Valves well Expreſt when Pinn'd out; One of them being cut thro' in its Middle, in dividing the Great Artery.

Fig. 14.

Repreſents in like manner a Portion of the *Arteria Pulmonalis*.

A A A, The Three Sigmoidal or Semilunary Valves.

THE
TWENTY-THIRD TABLE.

Fig. 1.

REPRESENTS the External Coat of a Vein viewed with a Microscope.

ABCD, The Fibres extended according to the Length of the Vessel, where may be observed the *Vasa Vasorum*.

Fig. 2.

A. The Second Coat of the Vein, called by *Dr. Willis*, the Vasculous and Glandulous Coat.

Fig. 3.

The Third or Internal Tunick of a Vein composed of Circular Fibres.

Fig. 4.

The External Coat of an Artery consisting of a *Rete* of small Nerves (A.) Blood-Vessels, (B) and Membranous Expansions (C.) On this Membrane of the Artery divers Glandulous Bodies appear composing greater and lesser Clusters, DE, variously dispersed.

Fig. 5.

AB, The Second Coat of an Artery consisting of divers *Strata* of Fibres variously decussating each other, and joyned with the Internal or Third Coat.

Fig. 6.

ABC, The Inner and Smooth Surface of the Third or most Internal Coat of the Artery; where the *Foramina* for the Branches which arise out of it, are expresst, and its Fibres extended according to its length B, C. The great Trunks of the Arteries do evidently appear to consist of a greater Number of *Strata* of Fibres, than those of the Veins; but the farther they recede from the Heart, they are both still more and more subdivided, and their Trunks and Capillary Branches become still thinner and thinner, till their outmost Extremities consist of one single transparent Membrane; chiefly composed of such Tubes, as only convey their *Succus Nutritius*. And this I am apt to think may serve for the Description of Blood-Vessels in general; and shall farther consider the Organization of the several Extremities of the Blood-Vessels, in speaking of their particular Offices relating to Secretion in the several Parts; wherefore at present shall only mention, that the Extremities of Veins and Arteries are continued Channels, variously contorted and not all of them of an equal Size, even in Parts which are uniform or the same. *Vid. App. Fig.* 4. 5.

After the Blood has past the Extremities of its Vessels, and is in its Return to the Heart again by the Veins; it there meets with divers Valves or Stops, which prevent the Weight of the Blood of the Inferior Parts of the Body, and the Recoiling of it in the Superior, (when any violent Motions affect the *Thorax*, as in Coughing, from pressing on the Extremities of the Vessels, and hindering its progressive Motion. That there is a Recoiling of the Blood in any extraordinary Motions of the *Thorax*, in the Jugular Veins, may be observ'd in taking Blood from thence, especially in Children. Hence it is the Valves in those Veins are necessary; least the Blood should again repass into the Vessels of the Brain with great Violence; which is also prevented in the Contortion made in the Internal Jugular Vein, in its *Specus* in the *Basis* of the Skull. I must confess I never yet observed above Two Valves (one opposite to the other) in the largest Vein that is furnished with Valves; however Anatomists commonly mention Three, and Professor *Bidloo* tells us of Four and Five Valves, as they appear in the following Figures.

Fig. 7.

Part of a Vein extended with Wind and dried, having a double Valve or Two Valves of Semilunary Figures, placed opposite to each other.

Fig. 8.

AA, A Portion of the Jugular Vein blowed up and dried;
BBB, Its Three-fold Valves.

Fig. 9.

Part of a Vein with Five Valves.

Fig. 10, 11.

AA, The Portions of Veins expresst in the Two preceeding Figures lay'd open;
BB, &c. Their Valves as they appear in their Insides.

Fig. 12.

The Valves as they appear in the Insides of the Veins according to *Bidloo*.

Fig. 13.

Two Valves as they appear when taken out of the Veins.

Fig. 14.

The unequal Distance of the Valves in the Veins; the *Vestigia* of the Valves being here only expresst, as they appear when the Vein is extended with Wind.

Fig. 15.

Represents (according to *Bidloo*) a System of the Arteries injected with Wax, and free'd from the Body of an Infant Six Months Old; which he tells us he has reserved: If so, it is a great Rarity indeed! For having more than once free'd the Arteries from the Body of an Infant, as well as from an Adult, and finding them far differing from this Figure, and not much disagreeing with the Descriptions and Figures of *Vesalius* and others; I cannot look on this, but as a Prodigy in Nature. Wherefore I shall here give you his Description of it, and refer you to my *Appendix. Fig.* 3. Where their common Appearance is expresst, as I now have them injected by me, and dissected from the Body of an Infant.

The *Arteria Aorta* (say's *Bidloo*) arising from the Heart, soon sends out Two small Coronary Branches. B, in the Body of the Heart. Its Trunk is divided on the *Pericardium* into the Ascendens C, and Descendens D. The First gives Branches to the Parts above the Heart, and is divided into the *Subclavii* E, from which the *Axillares* F, and Internal Mammary G, Three or Four *Intercostales* H, and *Cervicales* I. do arise. From the Axillary Artery are Branches communicated to the *Scapula* K, and to the Superior Parts of the *Thorax*. When it has got between the Muscles of the Cubit, it is divided into Two little Branches; the First of which L, goes to the Wrist, Thumb, and Fore-Finger; the other to the Three other Fingers. It divides into Two about the *Thymus*, and Forms the *Carotides* M. These ascending near the Wind-pipe after having sent several Branches to the Tongue, *Larynx* and Parts adjacent, and are divided into the External N, and Internal Branch O, the Exterior supplies the Face, Lips, partly the Ear and lower Teeth; the other Branch serves the Forehead, Temples and Neighbouring Parts.

The Inward Branch ascending streight through the *Os Sphænoides* creeps under the *Dura Mater*, and forming various *Plexus's*, in that Part within the Skull, it is cover'd with a particular Coat already describ'd; it sends out small Branches near the Optick Nerves; but the large Trunks creep back again, sometimes united and by and by separated from each other. There are small Branches convey'd to the Spinal Marrow, partly above and partly below the Heart. From the Axillarie's, and ascending and descending Trunks, it derives several Branches which reflected into a Circle, creep through its Coverings and several Parts of the Head. The descending Trunk of the *Aorta* D, supply's some of the Intercostals 1, and the Neighbouring Muscles and Parts; there is a large Trunk 2, also sent to the Diaphragm; under the Diaphragm the Branches of the *Viscera* of the *Abdomen* are remarkable. *viz.* of the Stomach, 3. The Inferior and Superior Meseraic Branches, 4, 5, those of the *Omentum*, or Caul, 6, of the Liver, 7, of the Kidneys 8, the Spermatics 9, and so on. About the *Os Sacrum* this Trunk is divided into Two Branches, from which others are again deriv'd to the Right Gut and *Pudenda*, some to the Hips, some to the Thighs and Legs, as well Internally, as Externally. Thus much concerning the principal Distribution of the *Aorta*.

In the next Place Professor *Bidloo* gives us the Anatomy of the Blood. In the Anatomy of the Blood Chymically performed (say's he) it is manifest there is a Water in it, which as well as it can be, is simply to be considered) a Spirit and Salts both fixt and volatile. Tho' by this Method (he very well say's) some Parts are very accurately discover'd; yet doth it exceedingly destroy the Appearances of some Figures, which ought by no means to be alter'd; wherefore he proposed the following Figure.

Fig. 16.

A, A small Drop of Blood inclosed in a Glass Tube, and its Particles by the Help of a Microscope are represented very much magnifyed.

B, The Globular Bladders.

C, The little Fibres variously turned, laid, and disposed, according to *Bidloo*. I must confess I have frequently view'd the Blood in the same Manner as here Expresst with a Microscope, and have constantly observed its Appearance as here represented: Nor could I ever apprehend the Blood was furnished with Fibres (so much talk'd of) but that the Fibrous Appearance it has, (when any Blood-Vessel is open in the Mouth, or in Bleeding into warm Water and the like) is owing to a Coagulation of its *Serum*, by which Means its Globules are entangled and frame those Fibrous Bodies: The Streaked Mass represented at D, E. (according to *Bidloo*) I am apt to think proceeded from a Coagulation of the Serous Part of the Blood, by sealing the Tube Hermetically; in doing which the Glass must be heated. To this our Author adds another Way of Anatomizing the Blood, thus:

The watery whitish Liquor, which is of a different Substance, being separated from the cold coagulated Mass of Blood, and set on the Fire, thickens in a short Time; the red Part which remains, (of which the more fluid Part being frequently washt away with warm Water,) appears like a grumous Heap; every Particle of which resembles a Globular Bladder; of which, some are Transparent, others not. The rest of the Mass which consists of very flexible Fibres, according to *Bidloo*, and being exposed to the Air and Cold, become very tough, tensile, and seem like Net-work, owe that Appearance to a Combination of the Globules variously stratified on each other.

The Third Way (which our Author proposes) of enquiring into the Blood, is when the Blood is separated from the *Serum* or Liquor it swims in, and put on a Piece of Paper dawb'd over with Lard, is become a little dry; after an External View of the Particles, gently with the Finger break off a little of the Mass of Blood; in which, you will presently behold little Globes of a differing Frame and Figure, little Fibres, and Streaks of the same Kind.

THE

Fig. 15.

Fig. 1.

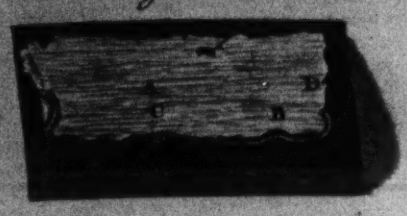


Fig. 4.

Fig. 16.

Fig. 2.

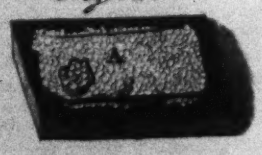


Fig. 5.

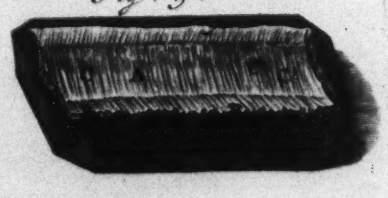


Fig. 8.

Fig. 7.

Fig. 9.

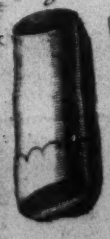


Fig. 11.

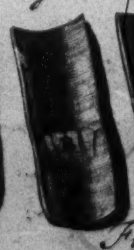


Fig. 10.

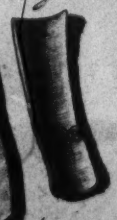


Fig. 3.

Fig. 6.

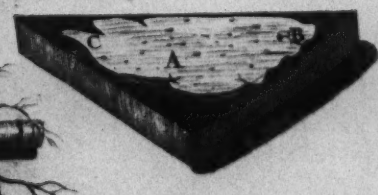


Fig. 14.

Fig. 12.

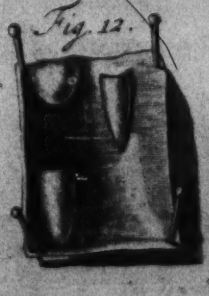


Fig. 13.

T. 24.

Fig. 7.

Fig. 1.

Fig. 8.

Fig. 6.

Fig. 5.

Fig. 3.

Fig. 2.

Fig. 4.

THE TWENTY-FOURTH TABLE.

Fig. 1.

THE Fore-parts of all the *Viſcera* within the Cavity of the *Thorax*, when taken out together.

A, The Heart cover'd with the *Pericardium*, and hanging to the Lungs by its Membranes and Veſſels.

B B, The Deſcending Trunk of the *Vena Cava*, on the Right Side, and the *Aorta* on the Left.

b b b, The Aſcending Branches of the *Arteria Magna*, which make the Two *Carotides* and Right Subclavian Branch.

C, Part of the *Mediaſtinum* cut from the *Sternum*.

D D, The Right and Left Anterior Lobes of the Lungs.

E E, The Two Poſterior Lobes of the Lungs.

F, Part of the Wind-Pipe.

G G, Portions of the Nerves call'd *Par Vagum*.

H, Part of the *Gula*.

In freeing the Lungs from the Cavity of the *Thorax*, we frequently find their Outward Membrane cleaving to the *Pleura*, nor has any known Inconveniencies attended ſuch Perſons when Living. The many *Phænomena* which have occurr'd to our Obſervation in Diſſecting Morbid Bodies, in whom theſe Parts have been Diſeas'd, are too Numerous to be inſerted in this Place; wherefore I ſhall only mention what I have more than once taken Notice of in examining theſe Parts, when they have not been Diſeas'd (*viz.*) by Blowing into the Blood-Veſſels, (*i.e.*) the *Vena Arteriosa* and *Arteria Venoſa* thoſe Veſſels deriv'd from the *Pleura*, as well as thoſe by *Ruyſch* call'd *Arteriæ Bronchales*, (Correſponding to which I have frequently obſerv'd Veins which empty themſelves into the Subclavian Branches;) all which I have found to Communicate with each other upon Diſtenſion; by which we may be inform'd the Blood do's not enjoy ſuch particular Veſſels in its Circulation thro' theſe Parts, as ſome have conceiv'd; but that Part of the Blood which Ariſes from the Right Auricle of the Heart, may paſs into the *Bronchial* Veins, as well as into the *Arteria Venoſa*; and on the other Hand, the Blood Springing from the *Bronchial* Arteries, may partly paſs into the Left Auricle of the Heart by the *Arteria Venoſa*, as well as by its Correſponding *Bronchial* Veins before mentioned.

Fig. 2.

Part of One of the Lobes of the Lungs cut off, and a Diviſion made according to its Length, ſo that a Branching of the Blood-Veſſels and *Bronchus* do appear.

A A, A Branch of the Pulmonick Vein, or *Arteria Venoſa*, lying on that of the *Bronchus*.

B, A Branch of the *Bronchus*.

C, The Pulmonick Artery, or *Vena Arteriosa*, cut Tranſverſely, lying on the other Side of the *Bronchia*.

Fig. 3.

Another Lobe of the Lungs Diſſected as in the preceding Figure.

A A B B, The Ramifications of the Pulmonick Artery Accompanying thoſe of the *Bronchia*: See *Tab.* 25. *Fig.* 10.

C, The External Membrane of the Lungs Rais'd and Pinn'd out to ſhew its Blood-Veſſels: Theſe Veſſels partly Ariſe from the Pulmonick Veſſels laſt mention'd, and partly from the *Arteriæ* and *Venæ Bronchiales*, as appears from what has been above Noted; and do frequently Germinate and Inoſculate with the Intercoſtal Veins and Arteries of the *Pleura*: The Germination and Inoſculations of theſe Veſſels I have had frequent Opportunities of obſerving to be in ſeveral little Parcels or *Faſciculi*, and of an Inch or Two in Length between the Lungs and *Pleura*: They very often appear in Filaments more or leſs Divided, and I am apt to think are frequently the Beginnings of thoſe Adheſions of the Lungs with the *Pleura*.

Fig. 4.

A A, The *Bronchia* or Branch of the *Trachea* made bare.

B B, Part of the Lungs.

Fig. 5.

The Fore-part of the *Larynx*, and Part of the Wind-Pipe, together with the Common Muſcles of the *Larynx*, &c.

A B, The *Muſculus Sternothyroideus*, not well Expreſt; it being here as it were continuous with the *Hyothyroideus* C E.

D, The *Os Hyoides*, or Bone of the Tongue reclin'd Laterally.

F, The Upper and Fore-part of the *Epiglottis in Situ*.

G, The Fore-part of the Scutiformal Cartilage.

H H, The *Muſculi Cricothyroidei*; on the Left Side One of them hanging down at its Beginning; the other remaining in *Situ*. Theſe Muſcles Spring from the Fore-part of the Annular Cartilage, and are ſoon Inſerted to the Internal, and Lower Part of the Scutiformal Cartilage.

I, O, The Fore-part of the *Cartilago Annularis*, made bare.

Fig. 6.

The Back-part of the *Larynx*, and its Muſcles plac'd on it; Expreſt very Confuſedly; which, together with the former Figure, is Erroneouſly deſcrib'd by *Bidloo*.

F F G K L M P Q, Should Expreſs the Back-part of the *Cartilago Annularis* cover'd with the *Muſculi Cricoarytenoidei Poſtici*, as it's Repreſented in our *Appendix*.

N N, The *Muſculus Arytenoideus*.

O, The Internal and Concave Part of the *Epiglottis*, as it appears when Pinn'd up.

R, The Poſterior Edge of the Scutiformal Cartilage of the Right Side.

S, The Membranous Part of the Wind-Pipe next the *Gula*.

Fig. 7.

The *Os Hyoides*, or Bone of the Tongue, together with the Fore-part of the the Cartilages which compoſe the *Larynx*, and Part of the *Aſpera Arteria*.

A, The External and Convex Part of the *Cartilago Scutiformis*.

B, The Internal and Concave Part of the *Os Hyoides*; which Part of it neceſſarily comes in View in this Poſition.

C, The Annular Cartilage.

D, The *Epiglottis*, Expreſt with the Internal Concave Part Forewards, as is truly Exhibited in the following Figure; which on the contrary, ſhould have been here Repreſented with its External and Convext Part, as in *Fig.* 5. F.

E, Part of the *Aſpera Arteria*, or Wind-Pipe.

F F, The *Glandulæ Thyroideæ*: From what I have hitherto obſerv'd, theſe Glands ſeem to be of the ſame Office with the *Thymus*: Nor do's their Colour or Compactneſs diſtinguiſh them from the *Thymus*; if we conſider, that by their Situation on the Wind-Pipe, they are perpetually in Motion, by which the Motion of the Blood is very much haſten'd thro' them, and the Blood-Veſſels conſequently Enlarg'd, whence their Colour and Compactneſs do's Ariſe.

G G, Two long Proceſſes of the Thyroide Cartilage, or *Scutiformis* ty'd to the Extremities of the *Os Hyoides*.

Fig. 8.

The *Os Hyoides* and Back part of the *Larynx*.

A, The External Convext Part of the *Os Hyoides*. This Bone of the Tongue appears in this preceding Figure, to be compos'd of Three Bones; the Middle-Bone A, is joyn'd to One of the Extremities of the Two Side-Bones, by a Cartilaginous Interpoſition call'd *Sychondroſis*; the Two other Extremities of theſe Side-Bones are ty'd to the Extremities of the Two long Proceſſes of the Thyroide Cartilage G G, *Fig.* 7. by a Ligament; which Connexion is call'd *Syndeſmuſis*.

B, The Internal Concave-part of the *Epiglottis* next the *Glottis*.

C C, The Arytenoidal Cartilages cover'd with the *Glottis*, or Internal Membrane of the *Oeſophagus*.

D, The Cricoidal Cartilage cover'd with the Internal Membrane of the *Oeſophagus* which compoſes the *Glottis*.

E E, The Two Sides, or Back-part of the Thyroidal Cartilage, whence the *Muſculus Oeſophageus* do's Ariſe; which Muſcle in a Semicircular Manner Inveſts the Back-part of the *Oeſophagus*.

F F, The Back-parts of the Thyroidal Glands.

G, The Poſterior-part of the Wind-Pipe where it is Membranous, and receives the Fore-part of the *Gula* in its way to the Stomach.

Having View'd the Fore and Back-parts of the whole *Larynx*, we come in the next place to Examine thoſe Cartilages which Compoſe it, when Separated from each other.

1, The External Convext-part of the Thyroidal Cartilage.

2, The Internal Concave-part of the ſame Cartilage: In theſe Two Figures, the Two Kinds of Proceſſes of the Thyroidal Cartilage are Remarkable; the Two Superior or long Proceſſes are joyn'd with the Extremities of the *Os Hyoides* G G, *Fig.* 7. the Two Inferior are faſtned to the Cricoidal Cartilage Laterally.

3, 4, The Cricoidal Cartilage; 3, the Fore-part; 4, the Back-part of this Cartilage: That Figure of the Right Hand (towards the Figure of the Lungs and Heart) Expreſſes the External, Inferior, and Back-part of the Annular Cartilage; That of the Left Hand, Repreſents the Inferior, Internal, and Fore-part of the Annular Cartilage.

5, 6, 5, 6, Two different Views of the Arytenoidal Cartilages, which are Articulated to the Superior Part of the Cricoidal Cartilage.

THE
TWENTY-FIFTH TABLE.

Fig. 1.

A Portion of the Wind-Pipe cut off.

A B B, The External Membrane of the Wind-Pipe Rais'd and Pinn'd out.

Fig. 2.

The *Muſculæ Faſciculi* lying between the Cartilages of the Wind-Pipe.

Fig. 3.

The Glandulous Membrane of the Wind-Pipe, where divers Cluſters of Glandules of a different Magnitude are Expreſt.

Fig. 4.

The Internal Membrane of the Wind-Pipe, compos'd of Fibres extended according to its Length; between this Internal and Longitudinal Order of Fibres, and the Cartilages, are plac'd another Tranſverſe Order, which paſs Circularly according to the Diſpoſition of the Cartilages: Theſe Internal Tranſverſe Fleſhy Fibres are more Numerous than the Superior Longitudinal Ones: Both theſe Orders of Fibres are Expreſt in this Figure. This Diſpoſition of the Fibres of the Internal Membrane of the Wind-Pipe, is very Conſpicuous in the Wind-Pipes of moſt Quadrupedes, eſpecially in the Larger ſort, as Oxen, Horſes, *&c.* But chiefly, (conſidering the Bulk of the Animal) in a Hog, in whoſe Wind-Pipe this Membrane appears compos'd of Strong Fleſhy Fibres; whence an Account may not improbably be ſuggeſted, why that Animal is capable of altering the Tone of the Voice from a *Baſe* to a *Treble*: For when theſe Fibres Contract, the Channel of the Wind-Pipe is very much Straitned, as well in its Diameter as Length; whence the Tone is rendred more Acute. This Conſtructure of the Inward Membrane of the Wind-Pipe, is continued to the Beginning of the *Bronchia*, where theſe Fleſhy Fibres leſſen and bear a Proportion to the Cavities of the *Bronchia*, and are at length ſo Thinn'd as to Frame Tranſparent Membranes, which help to compoſe the *Veſiculæ* of the Lungs.

Fig. 5.

Part of One of the Lobes of the Lungs, with the *Bronchia* Injected with Wax to exhibit the *Lobuli*.

A, Part of the Bronchial Tube cut off.

B B, The *Lobuli*, or diſtinct Cluſters of the *Veſiculæ*, partly compos'd of the Extremities of the *Bronchia*; and partly of the Blood-Veſſels of the Lungs: Theſe *Lobuli* are not always of the ſame Figure, ſome being Round, others Oval, ſome Oblong, and others Variouſly Figur'd.

C C, The *Interſtitia* of the *Lobuli*; which are Inveſted with the Internal *Lamina* of the Propet Membrane of the Lungs, here Pinn'd out; on which the Blood-Veſſels are very Conſpicuous: Theſe *Interſtitia*, or Spaces between the *Lobuli*, Appear in the Lungs of a *Fœtus* very plain, and do not Communicate with the *Veſiculæ* of the *Lobuli*, but are diſtinguiſh'd from them, as do's Appear by Blowing into theſe *Interſtitia*; which may be done with a Blow-Pipe, after Wounding the External Membrane of the Lungs, and you will find the *Interſtitia* of the *Lobuli* very much Diſtended with Wind, and the *Veſiculæ* not at all Inflated: Nor on the Contrary, will theſe *Interſtitia* be any ways Inflated by Blowing into the *Bronchia*, tho' the *Veſiculæ* and *Lobuli* are very much Extended.

D D, The Branches of the Pulmonick Vein and Artery on each Side the *Bronchia*: See *Fig.* 10. A, B.

Fig. 6.

Part of the *Bronchia* with divers *Lobuli* of One of the Lobes of the Lungs. Dr. *Willis* who has given a Figure of theſe *Lobuli*, after the Manner as they are here Repreſented, ſays, that by filling the *Bronchia* with a Liquid, theſe *Lobuli* may be ſeparated from each other. I muſt confeſs I have more than once Attempted to Divide theſe *Lobuli*, but could not be ſatisfied of their Appearance like this Figure: The External Surface of the *Lobuli* in the *Fœtus* Appear Angular, and are in a Cubical manner plac'd by each other.

A, The Inſide of the *Bronchia*, where the Holes for divers of its Ramifications which paſs out of it; and the Straight Progreſs of the Fibres of its Internal Membrane do Appear.

B B, The *Bronchia* divided into leſſer Branches; to which the *Lobuli* are Faſtned.

C C, The *Lobuli*, which may be more or leſs Divided, and are compos'd of the *Veſiculæ*. The *Veſiculæ* as above hinted, are Fram'd by the Extremities of the *Bronchia*, and the Pulmonick Blood-Veſſels.

N. B. *The* Lobuli *in this Figure may be obſerv'd to have the Extremities of the Blood-Veſſels Branch'd on Them. Each* Veſicula *alſo has One of the Extremities of the Pulmonick Veins and Arteries Branch'd on it; and without doubt* (*Conformable to the Extremities of the Blood-Veſſels of other Parts*) *thoſe Veſſels alſo are continued Channels on the* Veſiculæ *of the Lungs. Here the Art of Nature is very Extraordinary, in Framing the Extremities of theſe Blood-Veſſels of the Lungs ſo very ſmall, and confining their vaſt Number in ſo narrow a Compaſs, as the Body of the Lungs; for theſe Pulmonick Blood-Veſſels Correſpond to thoſe of the whole Field of the Body, in conſtantly Diſcharging the Blood thro' them, as well as thro' the Heart; whilſt Life with perfect Health is maintain'd. And notwithſtanding One Half of the Lungs is compleatly Vitiated,* (*as I have more than once found in Diſſecting Morbid Bodies*) *yet nevertheleſs the Circulation of the Blood has been ſtill carried on for ſome time. Tho' in this Caſe Reſpiration muſt not only be very Quick and Attended with no ſmall Difficulty on frequent Occaſions; but the Heart muſt alſo Labour very much to drive the Blood on.*

Fig. 7.

A Portion of the External Surface of the Lungs cut from them, when Dri'd, after Inflation.

A A, The External Membrane.

B B, The *Lamellæ* of the External Membrane, which paſs between the *Veſiculæ* and compoſe the *Lobuli*; between which, the *Interſtitia* neceſſarily Reſult.

C D, The *Lobuli* compos'd of the *Veſiculæ*, which are here well Expreſt.

Fig. 8.

The *Aſpera Arteria* or Wind-Pipe, together with the *Bronchus* or Ramifications of it, free'd from the Lungs.

A A, The Fore-part of the Wind-Pipe.

B B, The Diviſion of the Wind-Pipe into Two Branches, and afterwards into more, call'd *Bronchus*.

C C, The Larger Branches of the *Bronchus*.

D D, The Leſſer, from whoſe Extremities the *Veſiculæ* are Pull'd off.

E E, The Semicircular Cartilages of the Wind-Pipe.

F G H, The Cartilages of the *Bronchia* of Various Figures and Sizes; ſome of which are Circular F F; others Semicircular, Triangular G; Quadrangular *&c.* H. Theſe Cartilages of the *Bronchus* are not Connexed to each other like thoſe of the Wind-Pipe it ſelf; but the Lower-parts of the Superior receive the Upper-parts of the Inferior; not unlike the Cruſtaceous Coverings of the Locuſts, or Tail of a Lobſter: ſo that in Inſpiration the *Bronchus* may be Coextended with the Tumified Lungs; for theſe Ligaments between the Cartilages of the *Bronchus* have an Elaſtick Power of Reſtitution; not unlike that ſtrong Ligament, plac'd on the Spines of the *Vertebræ* of the Necks of Quadrupedes; by which means the Superior Parts of the Lower Cartilages of the *Bronchus* are drawn under the Inferior Parts of the Upper, in Expiration: But in Inſpiration the Ligaments are Extended, and the Inferior Cartilages are with-drawn from under the Superior; and to this Action in Expiration the Longitudinal Fibres of the Wind-Pipe (which paſs into the *Bronchus*) do concur to Contract them. In Inſpiration the Weight of the Superincumbent Air is ſufficient to Extend the *Bronchus*, and conſequently the Lungs, when the Cavity of the *Thorax* is Widen'd by the Muſcles which Draw the Bibs up.

Fig. 9.

A ſmall Portion of the Lungs, whoſe Bronchial Branch is fill'd with Injected Quick-Silver.

A, The Bronchial Branch; on both Sides of which, the Pulmonick Blood-Veſſels Appear.

Fig. 10.

Part of the Largeſt Branches of the *Bronchus* free'd from One of the Lungs; together with the Pulmonick Blood-Veſſels and Lobes Injected with Wax.

A A, The Pulmonick Vein.

B B, The Artery fill'd with different Colour'd Wax. Beſides freeing the *Bronchia*, as in *Fig.* 8. there is another way of Demonſtrating their Ramifications by pouring of Melted Tin into them; which may be Practis'd in the following Manner. Cut off one Side of the Humane Lungs at the Diviſion of the *Trachea* B B, *Fig.* 8. and with the Feather End of a Gooſe-Quill ſo wipe the Inſide of the *Bronchia*, by often thruſting it into their Various Ramifications, that at length it no longer comes out wet with the *Mucus* they have in them. The Inſides of the *Bronchia* being thus throughly Dri'd with a Feather: In like Manner Anoint them with Linſeed Oyl. This done, Tye the Mouth of the Divided *Trachea* to a Tin or Iron Tunnel: This Tunnel muſt be ſo plac'd that the Lungs may hang Pendulous and Free; but leaſt their Flaccidity ſhould too much Compreſs the *Bronchia*, it's convenient to paſs divers Threads thro' the External Parts of the Lungs, and ſo Faſten them to the Floor and other convenient Places, that the Lungs may be Extended thereby: In doing of which, be ſure you do not diſtort the Lungs from a direct Pendulous Poſition; but that the large Trunk of the *Bronchia* remains Perpendicular to the Tunnel. This done, Melt Block-Tin and pour it into the Tunnel; in doing of which, ſtand at ſome Diſtance, leaſt the Conflict which ariſes from the hot Metal in its meeting with the remaining Moiſture in the *Bronchus*, ſcatters it on your Hands, or Face, *&c.* N. B. *If the Metal is made very hot it will ſo Scorch the Firſt Paſſages of the* Bronchia *as to Contract them, and thereby Obſtruct the reſt: Nor muſt it want Fluidity, leaſt its paſſing into the ſmaller Branches is thereby Hindred. The* Bronchus *being thus Injected in the Lungs; lay them in Water, Nine, or Ten Days, till they begin to Putrifie; then Boyl the whole Lungs off the Block-Tin, and you may expect to ſee it much fuller of Branches than it's Expreſt in the* 11*th Figure.*

Fig. 11.

Repreſents the Ramifications of the *Bronchia* in Block-Tin, as above Deſcrib'd.

THE

Fig. 8.

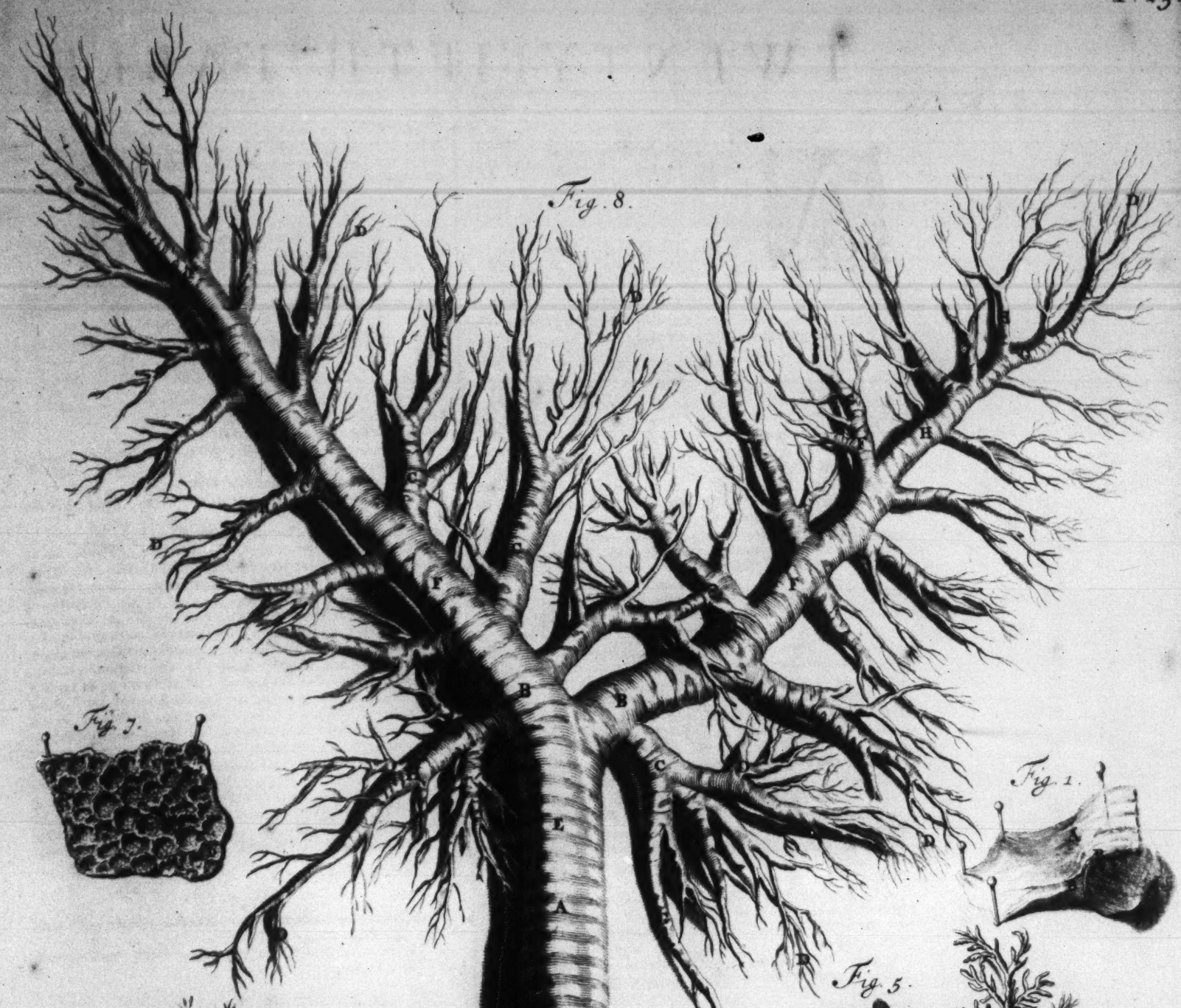


Fig. 7.

Fig. 1.

Fig. 5.

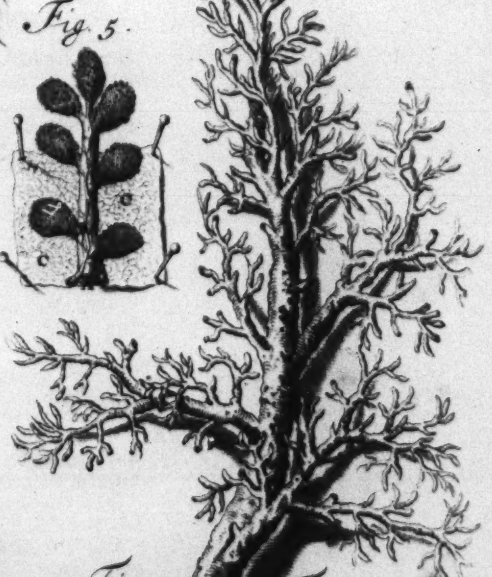


Fig. 10.

Fig. 9.

Fig. XI.

Fig. 4.

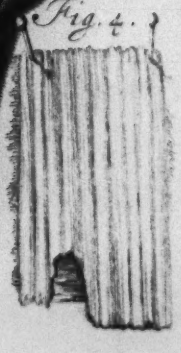


Fig. 6.

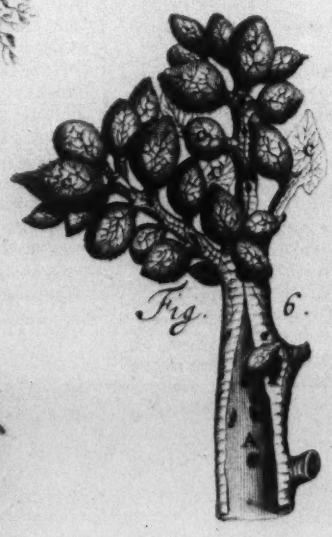


Fig. 3.

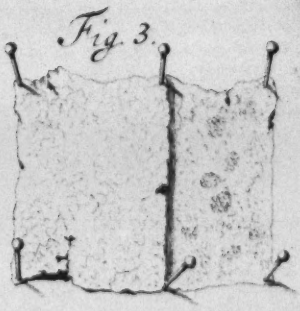


Fig. 2.

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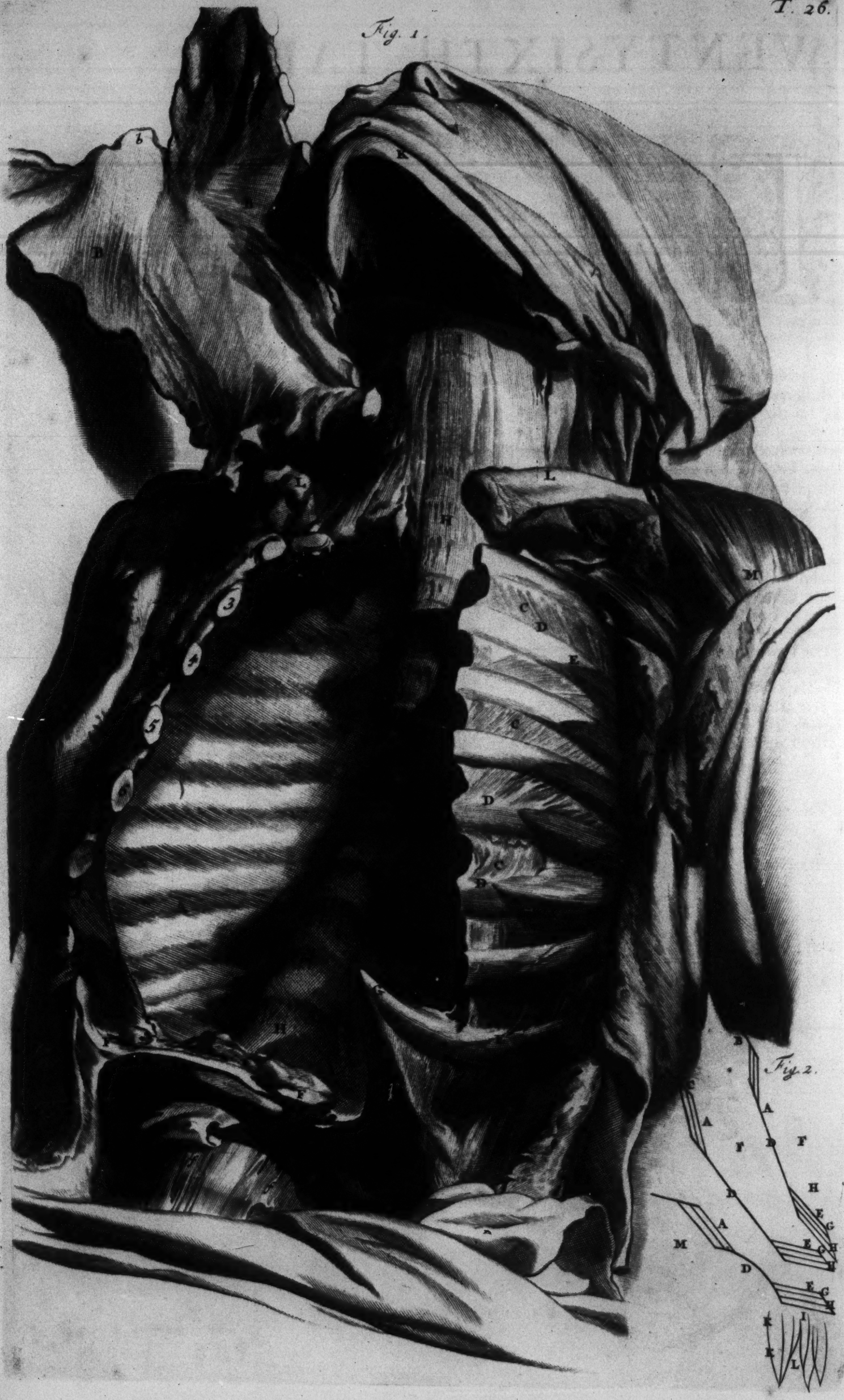

Fig. 2.

THE
TWENTY-SIXTH TABLE.

Fig. 1.

THE upper Part of the Body lying in a Supine Posture, with the *Os Pectoris* or *Sternum* rais'd, together with the Cartilages of the Ribs which are connexed to it; so that the Cavity of the *Thorax* after its *Viscera* are remov'd, comes in view.

A A A, The Cavity of the *Thorax* invested with the *Pleura*, whose smooth Surface towards the Lungs, is here seen.

B B, The *Musculi Triangulares* as they Arise from the Inferior and Internal Part of the *Sternum*, and Ascend to their Insertions at the Bony Endings of the Fourth, Fifth, and Sixth Ribs: In this View of the Internal Part of the *Sternum*, the Mammary Blood-Vessels on each Side of it are conspicuous: The Cartilaginous Endings of the Two First Ribs are also remarkable, being somewhat longer than the rest.

b, The Ensiformal Cartilage.

C D, Superior) The Course of the Fibres of the Internal Intercostal Muscles which appear thro' the *Pleura* A A.

C D, Inferior) The External Intercostal Muscles whose Fibres decussate the Internal like the Letter X.

These Intercostal Muscles arise from the Lower Edge of each Superior Rib, and are Inserted to the Upper Edge of each Inferior one: They are employ'd in bringing the Ribs nearer each other, to Enlarge the Cavity of the *Thorax* in Inspiration.

D D, *&c*, The Seven Superior or True Ribs.

E E, The Saw-like Endings of the *Serratus Major Anticus.*

F F, The Diaphragm free'd from the Cartilaginous Endings of the Ribs and Ensiformal Cartilage, b.

f f, The *Musculi Psoii* partly in view.

G, The Cartilage of One of the Bastard-Ribs which is not joyned to the *Sternum.*

H H, The Bodies of the *Vertebræ* of the *Thorax.*

I, The *Vertebræ* of the Neck.

K, The Lower Jaw-Bone made bare.

k, The *Musculus Pterigoideus Internus in Situ.*

L L, The *Claviculæ.*

M, Part of the *Deltoides* Muscle.

3, 4, 5, 6, The Bony Endings of the Third, Fourth, Fifth and Sixth Ribs, cut from the Cartilages which are fastened to the *Sternum.*

Fig. 2.

See *Tab.* 52.

THE

TWENTY-SEVENTH TABLE.

THE Skin, Fat, and Membranes being removed, the Muſcles appear on the Back as follows.

A A, B B, C, D D, E, F F, G, H, } The *Muſculus Cucularis* or *Trapezius* on both Sides *in Situ*:

Either of theſe ariſes Fleſhy from the *Os Occipitis*, and Tendinous from the *Ligamentum Colli* and Points of the Spines of the Three Loweſt *Vertebræ* of the Neck, and Eight Superior of the *Thorax*; from which broad Origination becoming thick and Fleſhy A A D D F, is ſo inſerted to the *Claviculæ* E and Tendinous H F to the *Spina Scapulæ* I. Theſe move the *Scapulæ* variouſly according to their Directions of Fibres, as Upwards, Backwards, and Downwards.

I, Part of the *Spina Scapulæ*.

K O O, The *Latiſſimus Dorſi* or *Aniſcalptor*: A thin, broad Tendinous Origination of This is deriv'd from the Spines of the Seven Inferior *Vertebræ* of the *Thorax*, and all the *Vertebræ* of the Loins, and Superior of the *Os Sacrum*; as alſo from the Poſterior Part of the Spine of the *Os Ilium* R, and begins to grow Fleſhy as it marches over the *Longiſſimus Dorſi* and *Sacrolumbus*, K. and in its Aſcent over the Ribs laterally, it has divers *Faſciculi* of Fleſhy Fibres ariſing from thence and joining with it, becomes ſtill thicker, more Fleſhy, and narrower, marching over the loweſt Angle of the *Scapulæ*; whence ſometimes a Fleſhy Portion of this Muſcle do's ariſe, which we have commonly found in thoſe Bodies in whom the *Teres Minor* was wanting, as it was in this Subject, and is at Length Inſerted with a ſhort flat ſtrong Tendon to the *Os Humeri*, at the Implantation of the *Teres Major*: Its Uſe is to draw the Arm Downwards and Backwards.

L L, Parts of the *Obliqui Deſcendentes Abdominis*.

M, Part of the *Deltoides* on the Left Side.

N, The *Infraſpinalis* on the Right Side.

O O, The *Sacrolumbalis* lying under the Tendon of the *Latiſſimus Dorſi* on the Right Side.

P, The *Baſis* of the Right *Scapula*.

Q Q, The *Rotundi Majores*.

R, The Spine of the *Os Ilium*.

S, Part of the *Glutæus Magnus*.

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THE

TWENTY-EIGHTH TABLE.

THE Muſcles of the Back lying under thoſe Repreſented in the preceding Table.

A B C D, The *Rhomboides in Situ*, It ariſes Tendinous from the Spines of the Two Inferior *Vertebræ* of the Neck, and Three or Four of the Superior of the *Thorax* C; growing Fleſhy in its Oblique Deſcent, it is inſerted to the *Baſis* of the *Scapula* D: It draws the *Scapula* Upwards and Backwards.

E, The *Rhomboides* on the Right Side, remaining at its Origin at the *Baſis* of the *Scapula*.

F, A Portion of the *Rhomboides* which we frequently find diſtinct.

G, Part of the *Elevator Scapulæ* or *Muſculus Patientiæ*: This Muſcle has divers ſeparate Originations from the Second, Third, Fourth and Fifth Tranſverſe Proceſſes of the *Vertebræ* of the Neck compoſing a large Fleſhy Muſcle, which is Inſerted to the Superior Angle of the *Scapula*.

H, That Part of the *Baſis Scapulæ* towards its Superior Angle.

I, The *Serratus Superior Poſticus* Ariſing thin and Tendinous from the Spines of the Two Inferior *Vertebræ* of the Neck, and Two Superior of the *Thorax*; and after an Oblique Deſcent over the Inferior Part of the *Splenius Capitis* and Upper Parts of the *Longiſſimus Dorſi* and *Sacrolumbalis*, becomes Fleſhy, marching under the *Scapula* to its Inſertions at the Second, Third, and Fourth Ribs. This Muſcle aſſiſts in drawing the Ribs Upwards in Inſpiration.

K, The *Serratus Inferior Poſticus*: The Origination of this Muſcle is much larger than this Figure ſeems to repreſent. I have frequently taken Notice of a Series of Tendinous Fibres continued between the *Serratus Superior* and this Muſcle; and its Lower Part in like Manner continued to the Spine of the *Os Ilium*, ſtrictly embracing the *Sacrolumbus* and *Dorſi Longiſſimus*; in which it performs the Office of a Bandage as ſhall be hereafter mentioned. Theſe Inferior Saw-Muſcles, in this Figure, are free'd from their Originations at the Spines of the *Vertebræ* of the *Thorax* and Loins, in raiſing the *Latiſſimi Dorſi*, Expreſt in the preceding Table K L O O, whoſe Tendinous Originations in moſt Subjects, do inſeparably cleave to theſe *Serrati* near the Spines: This Figure demonſtrating the Progreſs and Inſertion of theſe Muſcles, I ſhall only add; their Uſe is to draw the Ribs Downwards, and Contract the *Thorax* in Expiration.

L, Part of the *Cucullaris* left at its Inſertion to the *Clavicula*.

M, The *Latiſſimus Dorſi* rais'd and left hanging at its Inſertion on the Right Side; the like is done on the Left, but not Letter'd.

N O P Q; The *Longiſſimi Dorſi;* This Muſcle and its Companion the *Sacrolumbalis* are inſeparable at their Origination from the Spine of the *Os Ilium*, Superior Part of the *Sacrum*, and all the Spines of the *Vertebræ* of the Loins; Externally it is Tendinous; Internally Fleſhy; in its Aſcent it beſtows divers Inſertions on the Tranſverſe Proceſſes of the *Vertebræ* of the Loins; but proceeding farther, it continues to derive Tendinous Originations from the Spines of the lower *Vertebræ* of the *Thorax*, which in their Progreſs become Fleſhy Fibres, and Terminate in the Fifth, Sixth and Seventh Spines of the *Thorax;* and this Part of this Muſcle *Bidloo* calls *Semiſpinatus*: The other larger Part of it, in its Aſcent on the *Thorax*, divides it ſelf after the Manner of a Palm-branch, into many Fleſhy Portions which become Tendinous at their Inſertions to the Tranſverſe Proceſſes of each *Vertebra* of the *Thorax*, and Tubercle of the Ribs, and ſome of the Tranſverſe Proceſſes of the *Vertebræ* of the Neck; This Muſcle is not only imploy'd in keeping the Trunk of the Body Erect and Bending it Backwards; but in Progreſſion, it has alſo a conſiderable Office; for when either Leg is mov'd Forewards, this Muſcle on the ſame Side, near its Origin, may be obſerved to be in Action; which we ſuppoſe is neceſſary to render the *Os Ilium* at that Time ſtable, to the End the Thigh-Bone may be more commodiouſly moved in its *Acetabulum* of the *Coxendix*.

R, The *Sacrolumbalis* which we ſhall deſcribe hereafter.

S, Part of the *Glutæus Magnus*.

S, The Spine of the *Os Ilium*.

T, The *Splenius Capitis*.

V, The *Deltoides*.

W, The *Infraſpinatus*.

X, The *Teres Major*.

Y, Part of the *Spina Scapulæ*, above which, Part of the *Supraſpinatus* may be ſeen.

Z, Part of the *Serratus Major Anticus*.

Ψ, The Seventh Rib made bare.

THE

TWENTY-NINTH TABLE.

DIVERS Muſcles imploy'd in moving the Back, *Thorax* and Arms.

ABDE, The *Muſculus Sacrolumbalis:* Its Origin is already deſcrib'd in the preceding Table with the *Dorſi Longiſſimus*, they ariſing inſeparably: At their parting below the laſt Rib, the Fleſhy Part of the *Sacrolumbus* is divided into divers Parts, which become ſo many diſtinct Tendons and Terminate on the Ribs, as may be ſeen on the Left Side of this Figure: Beſides theſe Fleſhy and Tendinous Productions of this Sacrolumbal Muſcle; it has another Order of Tendinous and Fleſhy Fibres which may be eſteemed as ſo many diſtinct Muſcles; They ariſing partly Tendinous and partly Fleſhy from the Tranſverſe Proceſſes of the Loins, and Poſterior Prominence of the Ribs, that is connexed to the Tranſverſe Proceſs's of the Back, whence Aſcending Obliquely outwards, become Fleſhy, and growing Tendinous, do paſs over Three or Four of the Superior Ribs, and join with the Firſt deſcrib'd Tendons at their ſeveral Terminations above mentioned. This Diſpoſition of the *Sacrolumbus* is continued the whole Length of the *Thorax*, even to the Fourth *Vertebra* of the Neck; which Upper Part of it is call'd by *Diemerbroek, Cervicalis Deſcendens*, and by him made a diſtinct Muſcle.

C, The Tendon of the laſt deſcribed Muſcle and *Longiſſimus Dorſi*, cut from the Spines of the *Vertebræ* of the Loins.

FHIKK, The *Longiſſimi Dorſi*; that of the Right Side being free'd from the Spines of the *Vertebræ* of the Back and Loins.

L, The Spines of the *Vertebræ* of the Loins.

MM, The *Muſculus Semiſpinatus* or *Tranſverſalis Dorſi:* The Courſe of the Fibres of this Muſcle agree exactly with that lying below it, called *Muſculus Sacer* G; which is Expreſt on the Right Side of the Spines of the *Vertebræ* of the Loins between LMC: They are call'd *Tranſverſales Dorſi* and *Lumborum*, becauſe they ariſe from the Tranſverſe Proceſſes of thoſe *Vertebræ*; from whence they aſcend Obliquely and are inſerted to the Spines of the Superior *Vertebræ*; which Oblique aſcending Diſpoſition of theſe Fibres may be obſerved in this Figure MM.

N, Part of the *Muſculus Trapezius* left on the Neck.

O, Part of the *Serratus Superior Poſticus* left at its Inſertion.

P, Part of the *Spina Scapulæ.*

Q, The *Baſis Scapulæ.*

R, *Muſculus Deltoides.*

S, *Infraſpinatus.*

T, *Teres Major.*

VW, Parts of the *Serrati Majores Antici*; that of the Left-Side repreſenting its Progreſs over the *Subſcapularis*, as it ariſes from the Internal Part of the *Baſis Scapulæ* as is mentioned *Tab.* 20.

XXX, The *Serrati Inferiores Poſtici* rais'd and left at their Inſertions.

Y, Part of the *Obliquus Deſcendens.*

ZZ, The Spines of the *Oſſa Ilii.*

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THE THIRTIETH TABLE.

SOME of the Muſcles imployed in Extending the Back and Loins, Rais'd.

A B C D E F G H I K, The *Longiſſimi Dorſi* and *Sacrolumbales* neat their Originations.

L, The *Sacrolumbalis* on the Left Side free'd from the Ribs, *&c.* and hanging looſe from the Trunk of the Body.

M M, Thoſe Tubercles of the Ribs connexed to the Tranſverſe Proceſſes of the *Vertebræ* of the *Thorax* made bare; whence the other Order of the Tendinous and Fleſhy Fibres of the Sacrolumbal Muſcle (mention'd in the precedent Table) do ariſe.

N N, The Spinal Proceſſes of the *Vertebræ* of the Back made bare.

n n, Their Tranſverſe Proceſſes.

O O, Parts of the *Muſculi Splenii Capitis.*

P, The *Infraſpinatus* Rais'd from the *Scapula.*

Q, Part of the *Rotundus Major.*

R R, Parts of the *Serrati Majores Antici* on both Sides.

S, The Upper Part of the Bone of the Arm laid bare.

T, The laſt or Twelfth Rib.

V, The *Quadratus Lumborum*: It ariſes Fleſhy from the Poſterior Part of the Spine of the *Os Ilium*, and after an Oblique aſcending Progreſs is ſo Inſerted to the Tranſverſe Proceſſes of the *Vertebræ* of the Loins: This not unlike the *Rectus Abdominis*, moves the *Vertebræ* of the Loins or *Os Ilium* nearer each other, as either is held moſt ſtable: So when we ſtand on one Foot it draws the *Vertebræ* to that Side, and makes the Trunk come towards a Perpendicular Direction of its Gravity to that Foot; as appears in the Figure of the Firſt Table, where the Right Leg ſuſtains the Weight of the whole Trunk, and Superior Parts: But if we hang by the Hands, then either of theſe *Muſculi Quadrati* Acting, draws the *Os Ilium* nearer the *Vertebræ* of the Loins.

It was neceſſary the Muſcles imploy'd in Extending the Head, Neck, Back and Loins ſhould be framed ſtrong enough not only to ſuſtain the Head and Trunk in their Projection forewards from the *Axis* of the *Vertebræ*; but that they ſhould move the whole Spine variouſly, eſpecially in Bending it backwards: Hence it is theſe Muſcles are not only more Numerous; but are Multiform, as appears in the *Dorſi Longiſſimus* and *Sacrolumbalis*; whereas the Bending Muſcles of the Trunk and Head are but one Pair to each, and they of a Longitudinal Order of Fibres only; namely, the *Par Rectum Internum Capitis*, or *Flexores Capitis*, *Tab.* 18. L L; and the *Recti Abdominis Tab.* 31. E E.

THE

THIRTY-FIRST TABLE.

REPRESENTS the Common Integuments of the *Abdomen*, and the External Appearance of its Muſcles on the Left Side.

AAAA, The Skin together with the Fat and Membranes of the Left Side Rais'd.

BB, The Fat remaining on the Right Side after Raiſing the Skin; where the *Lobi* of Fat and the Blood-Veſſels paſſing between them, are Elegantly Expreſt.

CDEFG, The *Muſculus Obliquus Deſcendens in Situ*; CC, Its Fleſhy Part Springing from the Ribs; DD, Its Inferior Tendinous Part, under which the Fleſhy Fibres of the *Aſcendens* do Appear.

EE, The Sraight Fleſhy Fibres of the *Muſculus Rectus*, as they Appear under the Tendons of the Deſcending and Aſcending Muſcles.

FF, The Tendinous Interſections of the *Rectus* Appearing thro' the Two Tendons of the Oblique Muſcles.

GG, The *Linea Semilunaris* compos'd by the Two Tendons of the Oblique Muſcles before they March over the *Rectus* to the *Linea Alba*.

H, The *Linea Alba*.

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Fig. 1.

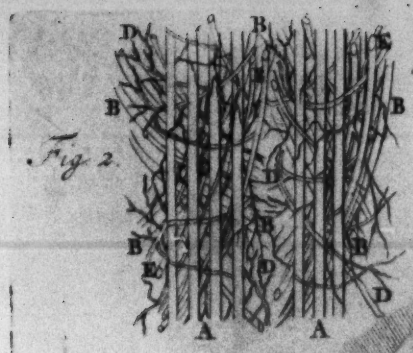

Fig. 2.

Fig. 3

Fig. 4.

THE
THIRTY-SECOND TABLE.

Fig. 1.

ABCD EFG, THE *Obliquus Deſcendens*, or *Declivis* Rais'd: See *App. Fig.* 1. 38, 38. It Ariſes with ſeveral partly Fleſhy and partly Tendinous Acute Productions from the Lower Margins of the Fifth, Sixth, Seventh and Eigth Ribs; where its ſeveral ſeparate Origins lie between the Indentations of the *Serratus Major Anticus*; theſe, for better diſtinction we call its Former Origin; Beſides which, it continues to derive more Heads in like Manner from the Ninth, Tenth, Eleventh, and ſometimes from the Extremity of the laſt Baſtard-Rib; (*Vid. Tab.* 29, Y.) where it's frequently Indented with the *Serratus Inferior Poſticus* (*Tab. ib.* XX.) as *Veſalius* takes Notice: From its Former Origin B B B, its Oblique Deſcending Fleſhy Part E E, Expands its ſelf into a Broad Membranous Tendon F F, before it Marches over the *Rectus* P P, to its Inſertion in the *Linea Alba Tab.* 31. H, and *Os Pubis* G: From its Latter Origin, in the ſame Manner Deſcending, (*Vid. App. Fig.* 2. 31.) it Ends partly Tendinous in the *Ligamentnm Pubis* C C, but chiefly Fleſhy on the Superior and Fore-Part of the *Os Ilium*. Beſides the Offices commonly Aſcrib'd to this Muſcle in Compreſſing the Inteſtines and Bladder, *&c.* either in Extruding the *Fœces* and Urine in both Sexes, or *Fœtus* in Women; They have ſtill a farther Uſe: That Part of this Muſcle that's Interjacent between its Lower Origin and Spine of the *Os Ilium*, *Tab.* 29. Y. bearing an Analogy in its Poſition to the *Maſtoideus* of the Head, (*App. Fig.* 1. 14.) ſerves for the Circumrotation of the Trunk upon the *Axis* of the *Vertebræ*; as when we Convert our Bodies to the contrary Side, the Feet remaining Stable.

H H H H, The Cartilaginous Endings of the Seventh, Eighth, Ninth, and Tenth Ribs; which, in the following Table are cut off at the Bony Parts of the Ribs and Rais'd: *Vid. Tab.* 33. K K.

I K K, The *Muſculus Tranſverſalis* Rais'd from the *Peritonæum* and Reclin'd Laterally; It derives a Tendinous Origin from the Tranſverſe Proceſſes of the *Vertebræ Lumbares*, and a Fleſhy One, from the Cartilaginous Endings of the Ribs, Spine of the *Os Ilium*, and *Ligamentum Pubis*; whence it paſſes over the Convext Surface of the *Peritonæum*, compoſing a Broad Tendon as it Marches under the *Rectus* to its Termination in the whole Length of the *Linea Alba*. When this Muſcle and its Partner Act, they preſs the *Abdomen* directly Inwards.

L M N O P, The *Recti Abdominis*; One remaining *in Situ*, the other being Rais'd: Either of theſe Muſcles derives its Origin from Two of the Cartilages of the True, and One of Baſtard Ribs; and in its Deſcent has Four, ſometimes Five Tendinous Interſections O O O O; ſtill Leſſening it ſelf below the Navel, becomes Tendinous, immediatelv above the *Os Pubis*, where it's Implanted M: This Bends the Trunk of the Body.

P P, The Under-Side of the *Rectus*, where the Epigaſtrick and Mammary Blood-Veſſels may be ſeen.

Q, The *Pyramidales*, which derive their Fleſhy Origin from the Upper-Part of the *Oſſa Pubis*, and Terminate in the *Linea Alba*.

R R S S, The *Obliquus Aſcendens*, or *Acclavis in Situ*: It Ariſes from the Fore-Part of the Spine of the *Os Ilium* and *Ligamentum Pubis*, whence Mounting with an Order of Fibres Inclining Forewards, Forms a Broad Membranous Thin Tendon S S, Marching over the *Rectus* to its Implantation in the *Linea Alba*; the Poſterior Part of it being Inſerted to the Cartilages of the Eighth, Ninth, Tenth, Eleventh, and Twelfth Ribs. Beſides its Office in Compreſſing the Contents of the Lower Belly; that Part of it that's between the Spine of the *Ilium* and Cartilaginous Endings of the Ribs, is not only Uſeful in drawing the Ribs Downwards in Expiration; but its Fleſhy Fibres (Interſecting thoſe of the *Deſcendens* in the *Ilia*) are alſo imploy'd in Converting the Trunk of the Body to the ſame Side, as the *Deſcendens* above Noted, do's to the Contrary. In the Structure and Reciprocal Cooperations of theſe Partsof the Aſcending and Deſcending Oblique Muſcles, the Art of Nature is very Admirable.

T T V V, The *Peritonæum* under which the Inteſtines Appear T T. Tho' the *Peritonæum* is a Tranſparent, Thin Membrane, yet it conſiſts of divers *Laminæ*, and is apparently Double in divers Parts, eſpecially between the Navel and *Os Pubis*: Beſides its giving an External Double Integument to all the *Viſcera* of the Lower Belly, it Provides ſtill others Inveſting each *Viſcus*, and Helps to compoſe the *Omentum* and Meſentery. What vaſt Extenſions the Membranes of the *Peritonæum* are capable of, is well known to thoſe who have ſeen it Affected with a Dropſie; for in its Duplicature I have often taken out above Fourſcore Pints. *Job Meekren* in his *Ob. Med.* at *Chir.* tells us of a Hundred and Twenty-Five Pints of clear Water contain'd within the Duplicature of the *Peritonæum*; beſides, the Membranes themſelves (in the Caſe now mention'd) were Thickned beyond a Thumbs Breadth, and their Internal Surface furniſh'd with many Fleſhy Bodies and Water-Bladders, call'd *Hydatides*; ſo that the whole, when taken out, ſeem'd to be a Monſtrous Maſs of Fleſhy Matter.

Fig. 2.

The Texture of the *Peritonæum* Examin'd with a Microſcope.

A A, The Nervous Fibres Running according to the Length of the *Abdomen*.

B B, Other Fibres carri'd in a Circular Manner from the Nervous *Plexus* thro' to the Breadth of the *Abdomen*.

C C, The *Fibrillæ* which join the preceding Fibres together, and are Complicated with them.

D D, The Nerves and their Branches which are very Remarkable about the Ventricle.

E E, The Blood-Veſſels broken off.

Concerning the Lymphe-Ducts of the *Peritonæum*, &c. conſult *Nuck*'s *Adenographia Curioſa*, Cap. IX.

The *Peritonæum* has divers Perforations; Forewards, for the Umbilical Veſſels in the *Fœtus*; in its Upper-Part, for the *Vena Cava*, *Gula*, and Eighth Pair of Nerves, *&c.* In the Lower-Part by the *Anus* Bladder of Urine, and *Uterus* in Women: in this Lower-Part of the *Peritonæum*, it's Two Proceſſes attending the Spermatick Veſſels fall next under our Inſpection.

Fig. 3.

A A, Part of the *Peritonæum*.

B, The Proceſs of its Internal Membrane, proceeding from within the Cavity of the *Abdomen*.

C C, The Spermatick Veſſels as yet Cover'd with the Double Proceſs of the *Peritonæum*. We call it a Double Proceſs of the *Peritonæum* in Men, that paſſes thro' the Muſcles of the *Abdomen* in the Inguen, becauſe it conſiſts of Two Membranes of different Extents; the External of which, being a Continuation of the External Membrane of the *Peritonæum*, is there call'd *Tunica Vaginalis*, Incloſing the Spermatick-Veſſels and Teſticle; the Internal Proceſs Deſcends about Four Fingers Breath on the Spermatick-Veſſels in the *Inguina*, and then Cleaves to them Inſeparably (and this *Nuck* calls a *Diverticulum*) as it's Expreſt, tho' ſomewhat ſtifly, in the following Figure.

Fig. 4.

A A, Part of the Internal Membrane of the *Peritonæum*.

B, The Orifice or *Anulus* of its Proceſs.

C, Its Progreſs on the Spermatick-Veſſels, call'd *Diverticulum*.

D, Its Cohesion to the Spermatick-Veſſels.

THE

THIRTY-THIRD TABLE.

SHEWS the *Viſcera* of the Lower Belly *in Situ*, after the Common and Proper Integuments of the *Abdomen* are laid Open, and ſome of them cut off, and the Cartilaginous Endings of the Baſtard Ribs divided from their Bony Parts, and turn'd Upwards.

AABB, The *Omentum*, where its Upper Membrane Appears Contiguous to the Bottom of the Stomach, from whoſe Inferior Coronary Veſſels it receives its *Arteriæ Gaſtricæ*, *Emploicæ Dextræ*, *Siniſtræ* and *Mediæ*, which have their Correſpondent Veins entering into the Coronary Veins, and Convey their Blood to the *Vena Porta*; the Arteries being Propagated from the Cœliack Arteries. This Superior Part or *Lamina* of the *Omentum* is not only a Continuation of that External One of the Ventricle, Borrow'd from the *Peritonæum*, but its Right *Ala* in like Manner is deriv'd from the Lower Part of the Liver, and its Left from the Concave Part of the Spleen: Thus the Superior and Outwardmoſt Part of the *Omentum* Ariſes; and after Deſcending on the Inteſtines, joins or is continued to its Inferior or Inward Part, in like Manner deriv'd from the *Colon*: Between theſe Superior and Inferior Parts, is fram'd the *Burſa Omenti*; which may be plainly Diſcover'd, if you pour Water into its Cavity; and tho' the Water will paſs it's many *Foramina*, yet it will nevertheleſs Diſcover the Lower Part of the *Omentum* to be Double.

CC, The Bottom of the Stomach where its Inferior Coronary Blood-Veſſels may be ſeen.

DD, The Liver.

E, The *Ligamentum Suſpenſorium Hepatis*, in which the Umbilical Ligament is Inclos'd.

F, The *Fiſſure* made by the Umbilical Ligament.

GG, Part of the *Colon* near its Beginning in the Right *Ilia*.

HHIII, The Small Guts, ſome of which being here Cover'd with the *Omentum*.

KK, The Cartilaginous Endings of the Baſtard Ribs cut from their Bony Parts, and turn'd up towards the *Sternum*: To theſe Cartilages, Parts of the Tranſverſe Muſcles of the *Abdomen* and the *Diaphragma* may be ſeen to Adhere in this Figure.

THE


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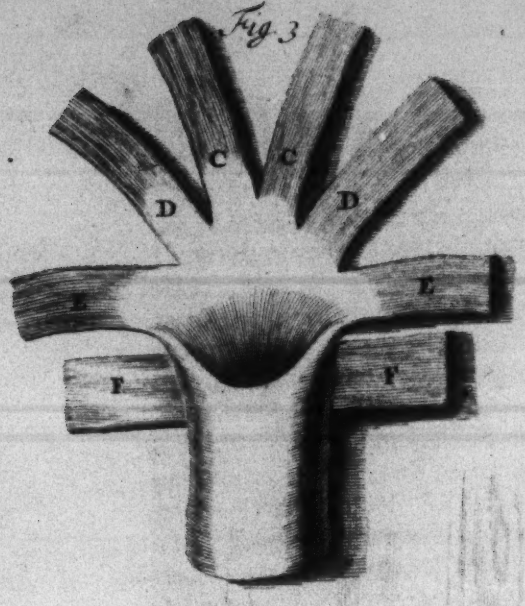
Fig. 3.



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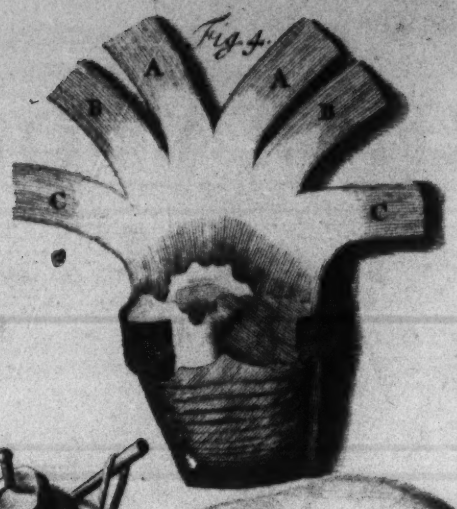

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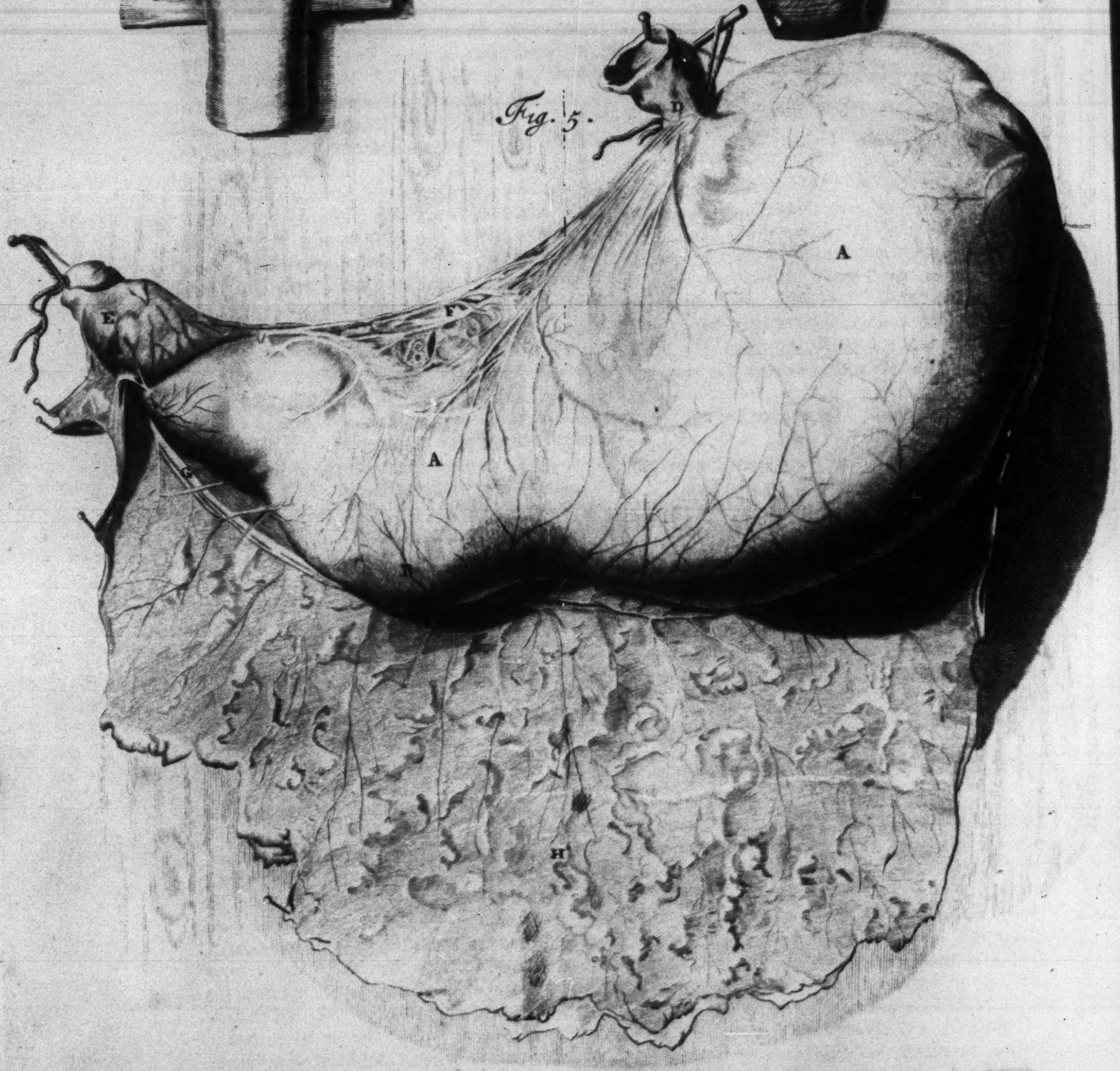

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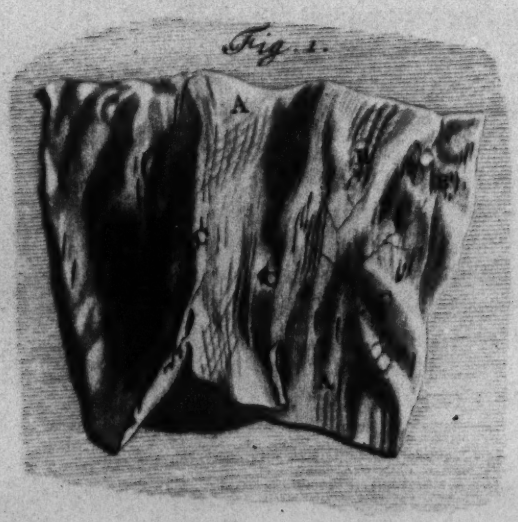

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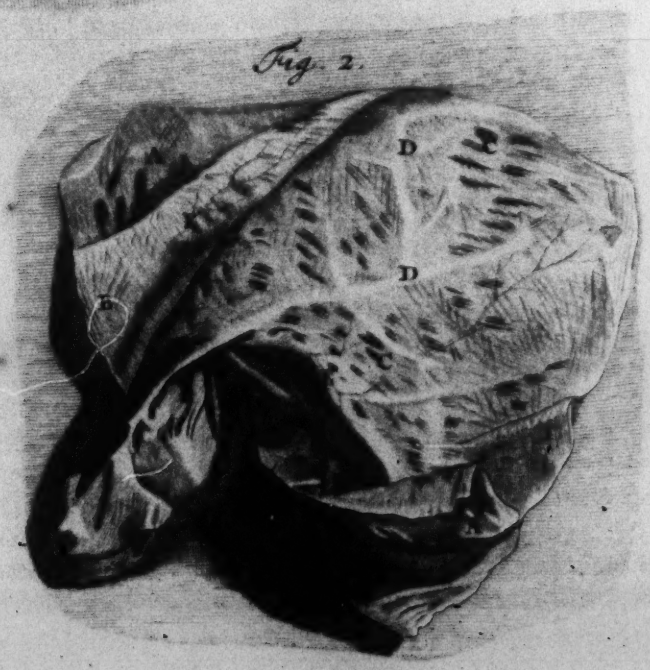


THE

THIRTY-FOURTH TABLE.

Fig. 1.

AA, A Portion of the *Omentum*, the Cells of which being fill'd with Oily Contents are call'd Fat.

BB, The Fatty Glandules of the *Omentum* which are plac'd in the Arboreous Diſtribution of the Fat.

CC, Divers *Foraminulæ* Collateral to the Arboreous Fatty Bodies.

Fig. 2.

The Membranes of the *Omentum* free'd from their Oily Contents; which Profeſſor *Bidloo* Propoſes to be done after the following Manner. When the Blood-Veſſels of the *Omentum* are Injected with Wax, or any Tenacious Body, then dip the whole in hot Oil of Turpentine, and with your Hand ſqueeſe it, and move it up and down till the whole Maſs of Fat is diſolv'd in that Oil. Afterwards expoſe the Membranes to the Air, or gentle Fire to dry them.

AA, The Upper *Lamella* or Membrane of the *Omentum*.

BB, The Lower Membrane of the *Omentum*.

CC, The *Foraminulæ*.

DD, The Arboreous Ramifications of the Porous Cells, whence the Fat or Oil is Expreſt.

EE, The Blood-Veſſels Injected with Wax according to *Bidloo*.

Fig. 3, 4.

Theſe Figures of the Muſcles of the *Pharynx* are Copied after *Bourdon*'s Table 4. *Fig.* 28, 29. and are agreeable to the Erroneous Deſcriptions of thoſe Muſcles by *Ryolan*, *Spigelius*, *Veſlingius*, *Bartholin*, &c. The Muſcular Contrivance of this Organ being vaſtly differing from what is here Expreſt, I ſhall add a Figure of it in the *Appendix*.

Fig. 5.

The Stomach with Part of the *Omentum* taken out of the Cavity of the *Abdomen*; the Stomach being ſomewhat Extended with Wind, and plac'd according to its proper Poſition.

AA, The External and Anterior Surface of the Stomach, Cover'd with a Common Membrane deriv'd from the *Peritonæum*.

BC, Two Bunchings out in the Lower Part, or *Fundus* of the Stomach.

D, Part of the *Gula* at the Upper or Left Orifice of the Stomach, call'd *Cardia*.

E, Part of the *Inteſtinum Duodenum* Ariſing from the Right or Lower Orifice of the Stomach, call'd the *Pylorus*.

F, The Superior Coronary Blood-Veſſels of the Stomach, and the Nerves of the Eighth Pair Complicated with each other, are here Elegantly Expreſt.

G, The Inferior Coronary Artery and Vein of the Stomach. Theſe Coronary Blood-Veſſels are in like Manner diſtributed to the *Omentum*.

H, The Superior or Outward Membrane of the *Omentum*, hanging at the Bottom of the Stomach.

In Diſſecting the Morbid Body of a Young Gentle-woman, by the Order of Dr. *Radcliff*: Amongſt other *Phænomena* of the *Viſcera* in the *Abdomen*, I found the *Omentum* ſo Leſſen'd, that at firſt Sight, it Appear'd doubtful wether there ever had been ſuch a Part fram'd in that Subject; but upon ſtricter Enquiry, that little Remains of it ſeem'd to Repreſent a Heap of ſmall Glands, containing a Steotomatous or Suet-like Matter. Nor was this Appearance of theſe *Steotomæ* on the *Omentum* only; but a Multitude of Little White Bodies or Specks (not unlike thoſe of the *Omentum*) plac'd at ſome ſmall Diſtance from each other, were ſpread on the Outward Membrane of the Stomach, Inteſtines, and Internal Surface of the *Peritonæum*. In this Subject the External Parts of the Small Guts ſo ſtuck to each other, that they ſeem'd to be contain'd in One proper Covering, or not unlike the Brain Cover'd with the *Pia Mater*: ſo ſtrictly did the Inteſtines Cleave to each other, that it was not without Violence I could any where Divide them to ſee the Meſentery: By this means the Periſtaltick Motion of the Guts muſt needs be very much Leſſen'd, if not quite Hindred; ſo that it was no wonder to find their whole Chanel fill'd with Excrements, even from the *Pylorus* to the *Anus*: Beſides the Inteſtines had ſuffer'd Mortifications in divers Parts, whilſt other Parts of them were Inflam'd and very much Thickned: Nor was there any Part of them Appear'd of a Natural Conſtitution; ſo general did this Diſeas'd-Habit Affect the *Peritonæum*, in all its Expanſions. Nor can I omit doing Juſtice to the Inquiſitive Dr. *Radcliff*, who upon frequent Obſervations of the Symptoms of this Caſe, left this Prognoſtick, *That there was ſcarce any of the* Viſcera *of the Lower Belly which had eſcap'd the Attacks of the Diſeaſe*: All which he ſuppos'd to Ariſe from a Scrophulous-Habit, as Appear'd by very large Tumified Glands of the Meſentery; of which Two very Remarkable Ones had ſo Compreſt the *Receptaculum Chyli*, as very little (if any) of the Aliment could at Length paſs into the Blood. Whence the Body became ſo very much Emaciated, that ſcarce any thing but Bones Appear'd under the Skin: Nor did I any where ſee the leaſt Lobe of Fat in the whole Diſſection. From what has been above taken Notice of in the *Omentum*, and Surface of the *Peritonæum*, whether Covering the Inſide of the *Abdomen*, or Outſides of the Inteſtines; It Appears, that when the *Mucus*, which is neceſſary in Lubricating the Inteſtines, is obſtructed; thoſe Parts are Subject to Adheſions, and the Periſtaltick Motion of the Latter can no longer be Perform'd, and tho' the Exiſtence of proper Glands for ſeparating this *Mucus* from the Blood do's not offer in Common Diſſections, yet it may be hop'd that the frequent Examining of Morbid Bodies, will at one time or other Demonſtrate them; which, I am apt to believe, not unlike the Sweating Glands of the Skin, are plac'd at certain Diſtances, and do diſcharge their *Mucus* from their Excretory Pores in like Manner; which *Mucus* may joyn with Fatty Exſudations from the *Omentum*, &c. and make a Compoſition neceſſary for making the Inteſtines ſlide on each other. That there is a Slimy Matter beſmearing theſe Parts, may be obſerv'd in Opening any Large Animal, not Diſeas'd, ſoon after Death. It is well known to the Butchers that this *Mucus* makes the Hands Glib or Smooth; to which End they commonly Uſe it, ſo ſoon as they have Open'd any Animal, by Rubbing their Hands with the Inteſtines. I know it's commonly ſuppos'd the Water in an *Aſcites* proceeds from a broken Lymphe-Duct within the Cavity of the *Abdomen*; but it's not unlikely that that Seroſity may at leaſt ſometimes Ariſe from an Exſudation by thoſe Glands; ſince we conſtantly find the *Peritonæum* very much Thickned in thoſe Caſes.

THE

THIRTY-FIFTH TABLE.

THE Membranes, Glandules, Blood-Veſſels, *&c.* which compoſe the Stomach.

Fig. 1, 2.

A A, *&c.* Portions of the Stomach ſhewing its Firſt or External Membrane, borrow'd from the *Peritonæum*; the Veins being Injected with Wax, are extended beyond their Natural Magnitude.

B B, The Superior and Inferior Coronary Veins, Inoſculating with each other in their Large Trunks.

Fig. 3.

A B, *&c.* The Branches of the Blood-Veſſels on the External Membrane of the Stomach, Repreſenting their Various Plexuſſes and Mutual Inoſculations with each other, *viz.* The Veins being join'd with Veins, and Arteries with Arteries, before they become Capillary.

Fig. 4.

The Second Membrane of the Stomach, call'd the Muſcular Membrane, conſiſting of Two Orders of Fibres.

A B B, The Firſt and Superior Order of Fibres, continued between the *Pylorus* and Upper Orifice of the Stomach.

A C C, The Second or Inferior Order of Fibres, embracing the *Fundus* of the Stomach.

Fig. 5.

A Portion of the Second or Muſcular Membrane of the Stomach Dri'd.

A A, The Firſt Order of Fibres,

B B, The Second; Conſiſting of Fleſhy and Tendinous Parts,

C C, Their Fleſhy Parts,

D D, Their Tendinous Parts.

The Third, or Internal Membrane of the Stomach, may be Divided into Three *Lamellæ*, and therefore may be conſider'd in a Threefold Manner.

Fig. 6.

A A, The Inward Surface of the Third Membrane of the Stomach, by Dr. *Willis* call'd the Villous Tunicle: The *Villi* or Velvet-like Surface of it, is beſt ſhewn by dipping it in Scalding Water.

B B, The Glandules as they Appear obſcurely under the *Villi*.

C D, *&c.* The Glandules and Veſſels of the Stomach as they Appear where the *Villi* are taken off, which may eaſily be done with the Aſſiſtance of Hot Water. This may be eſteem'd the Second Part of the Third Membrane of the Stomach.

Fig. 7.

The Third or Laſt Diviſion of this Internal Membrane of the Stomach, which *Bidloo* and others call the Tendinous, and Dr. *Willis* the Nervous Membrane.

A B, Divers Perforations for the Blood-Veſſels to paſs thro' this Membrane.

Fig. 8.

The whole Stomach partly laid Open to ſhew the Foldings of its Internal or Third Membrane.

A A, The Foldings of the Internal and Third Membrane, in which the Villous Surface do's Appear.

B, The Upper and Left Orifice or Mouth of the Stomach, with Part of the *Gula*.

C, A Portion of the *Inteſtinum Duodenum* continued to the *Pylorus*.

D, The *Pylorus* or Lower and Right Orifice of the Stomach.

E, The *Antrum Pylori*.

The *Omentum* and Superior and Inferior Coronary Blood-Veſſels, are here again Expreſt as in the preceding Table, *Fig.* 5.

Fig. 9, 10.

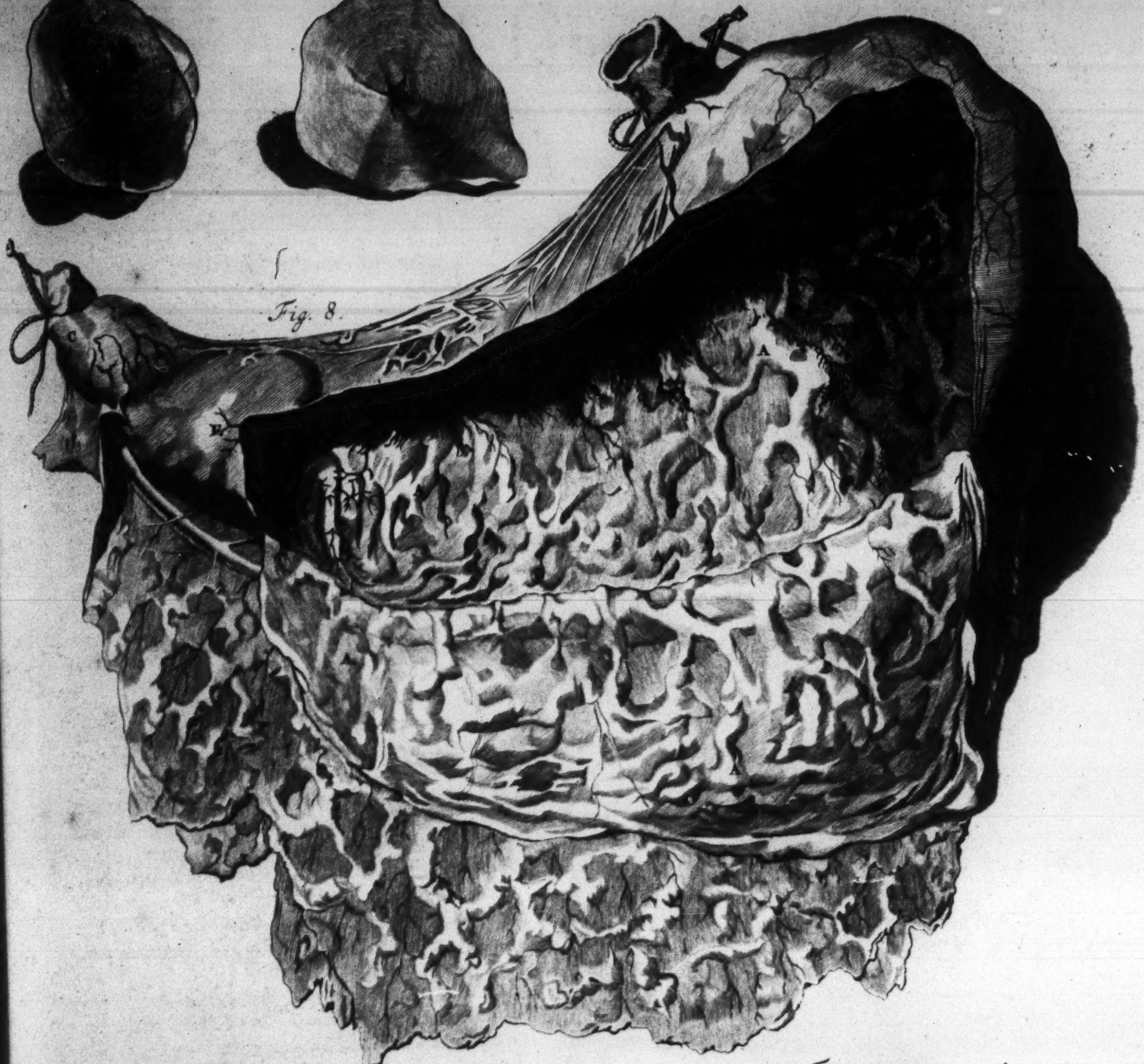
The Two Orifices of the Stomach when Dri'd after Inflation. *Fig.* 9, The Superior. *Fig.* 10, The Inferior.

The *Plexus* of Blood-Veſſels Appearing in the Inſide of the Stomach, *Fig.* 8. are Remarkable, and their Appearance is owing to the Stagnation of the Blood in them. The Stomach cannot be Wounded into its Cavity, but many of theſe Veſſels, eſpecially the Arteries muſt be Divided, and no ſmall Effuſion of Blood muſt neceſſarily happen, which if it flows into the Cavity of the Stomach, muſt either be Ejected by Vomit, or paſs down the Inteſtines with the Excrements, if the Patient Survives: An Inſtance of which lately occur'd, where my Friend Mr. *Goodier* call'd me to ſee the Patient; who had receiv'd a Wound by a Sword on the Right *Hypochondrium*, which paſt Obliquely to the *Linea Alba*, immediately below the Enſiformal Cartilage: A Vomitting of Blood ſoon follow'd with Syncopes, which denoted the Stomach to be Wounded, not leſs than a Pound of Coagulated Blood being Ejected by the Mouth ſo ſoon as he was brought to his Bed. After ſome Hours the Vomiting ceas'd, and the Pulſe was recover'd which before was very feeble: Nor was it many Days before the Patient Recover'd and could Drink Two or Three Quarts of Strong Drink at a Sitting; what became of him afterwards, we could by no means learn. By this it Appears that Wounds in the Stomach are not always Mortal, tho' they very frequently prove ſo, as in the Caſe of one Wounded in like manner with a Sword on the Left *Hypochondrium*, in whom the Stomach was Wounded alſo; but in this the Contents of the Stomach in no ſmall Quantity, were Diſcharg'd with a great deal of Blood into the Cavity of the *Abdomen*, as Appear'd on Diſſecting his Body. If the Trunk of a Large Artery happens to be Wounded on the Stomach, it is a great Chance but it proves Mortal thro' the Flux of Blood, but if the Wound happens where the Blood-Veſſels are Capillary, the Flux of Blood do's not prove Fatal.

Fig. 10.

Fig. 9.

Fig. 8.



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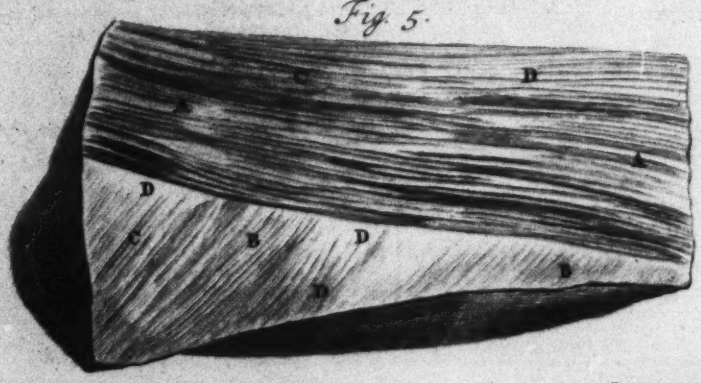

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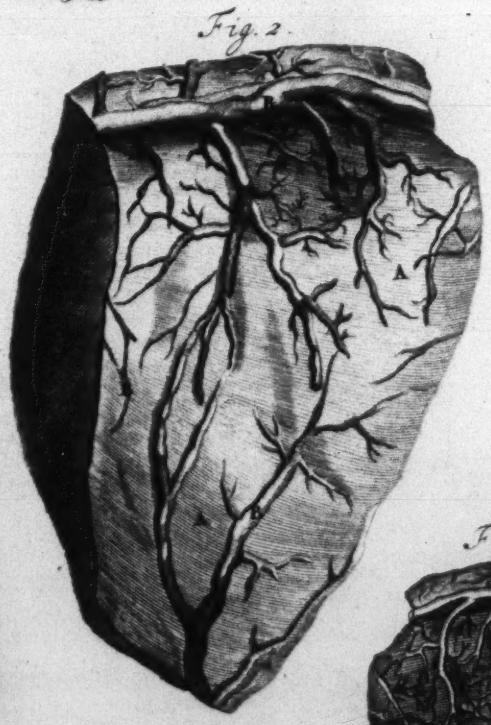

Fig. 7

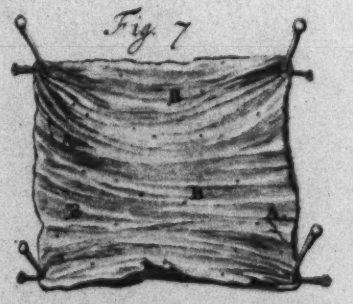

Fig. 4.

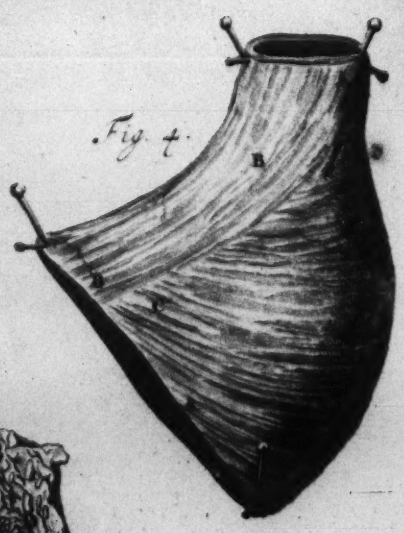

Fig. 1.

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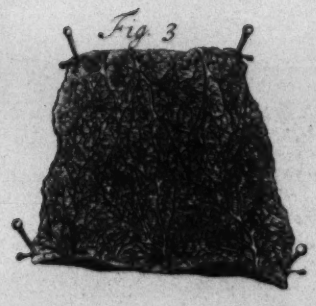

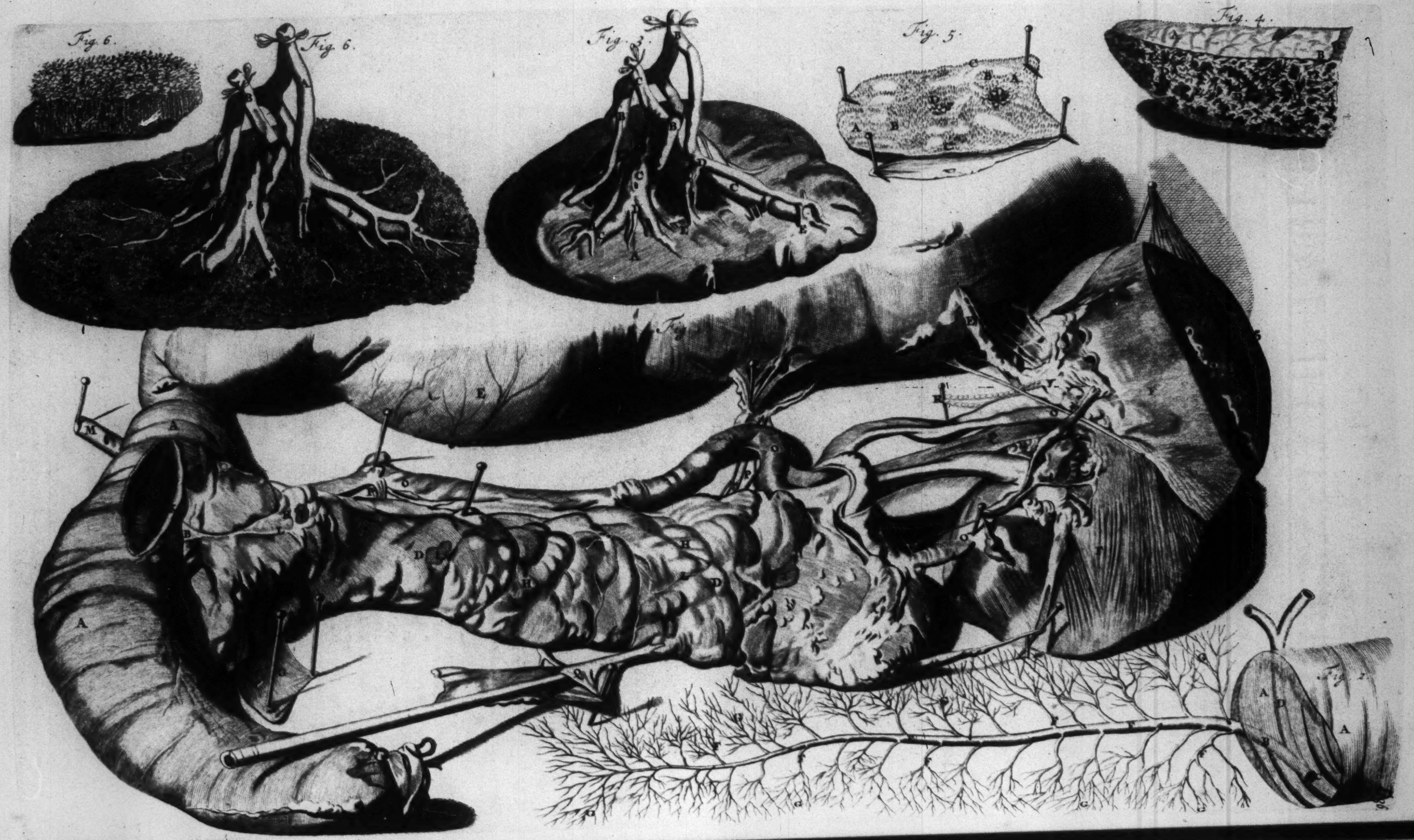
Fig. 6.
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Fig. 4.

THE
THIRTY-SIXTH TABLE.

Fig. 1.

SHEWS the Lower Part of the Stomach and a Portion of the *Inteſtinum Duodenum* continued to it, together with the *Pancreas* and Spleen.

A A, The Upper Part of the *Duodenum* continued from the Right Orifice of the Stomach or *Pylorus*, in a Semicircular Manner; in which Bending of the Gut, the Common Paſſage for the Gall and Pancreatick Juice empties it ſelf N. This Curvation of the Inteſtine is here neceſſary, leſt the Aliment after having undergone a Preparation in the Stomach, ſhould too quickly deſcend into the Small Guts, before it has met with a due Mixture with the Gall and Pancreatick Juice.

B, The *Ductus Pancreaticus* made bare, before it enters the External Membrane of the Inteſtine, between which, and the Internal Membrane, it paſſes before it arrives at its Orifice N, in Conjunction with the Common Gall-Duct.

C, The Progreſs of the Common Gall-Duct in like Manner between the Membranes of the Gut, before it arrives at its Orifice N, in Conjunction with the Pancreatick Duct.

D D, The Superior and External Part of the *Pancreas* as it appears in its proper Situation.

E E E, Part of the Bottom of the Stomach next the *Pancreas*, *Colon* and Spleen; whence divers Blood-Veſſels are propagated, eſpecially Veins, which diſcharge Part of the Blood from the Stomach into the *Ramus Splenicus*: The moſt remarkable of theſe have obtained the Denomination of *Vaſa Brevia*; to which, ſome *Anatomiſts* have inconſiderately aſſign'd divers Uſes.

F F, The Internal Concave Part of the Spleen next the *Pancreas* and Stomach, cover'd with its Proper Membrane, as well as a Common one continu'd from the *Peritonæum*.

G, The External Membrane of the *Pancreas* rais'd and pinn'd out:

H, That of the Spleen in like Manner rais'd and pinn'd out.

I I I, Divers *Veſiculæ* or Airy Bladder-like Appearances, occaſion'd by the Breaking forth of the Wind into the *Interſtitia* of the Common and Proper Membrane of the *Pancreas*, in Blowing into its *Ductus Excretorius* B.

K, The *Duodenum* open'd, to ſhew the Common Orifice of the Gall and Pancreatick Duct.

L L, The Pancreatick Duct made bare in divers Parts of the *Pancreas*.

M, Part of the Common Gall-Duct.

N, The Common Orifice of the Gall and Pancreatick Ducts, opening into the Cavity of the *Inteſtinum Duodenum*.

O O, &c. The *Arteria Splenica* injected with Wax; its Magnitude and Tortuous Progreſs being very remarkable as it is truly Expreſt in this Figure.

P P, Divers Arteries of the *Pancreas* ariſing out of the Splenick Artery.

Q, The *Vena Splenica* in whoſe Cavity a Blow-Pipe is inſerted.

R, One of the Lympheducts ariſing from the Spleen pinn'd out. In Blowing into the *Vena Splenica* of a Caſtling Calf, I have frequently obſerv'd the Lympheducts of the Spleen diſtended with Wind: The like has happen'd by Blowing into the Splenick Artery after tying the Vein, tho' not ſo immediatly as by Blowing into the Vein. The ſame *Phænomena* I have obſerv'd in the *Penis* of a Dog by Blowing into the Veins of that Part. The Accurate *Nuck* in his *Adenograp. Curio.* p. 52. tells us by forcibly Blowing into the Splenick Artery, he has not only ſeen divers *Veſiculæ* to riſe on the Surface of the Spleen; but divers Lymphatick Veſſels ariſing from thoſe *Veſiculæ* and diſtended with Wind alſo: In the Subſequent Page he takes Notice that the Spermatick Vein of the Teſticle being diſtended with Wind, ſhews the Lympheducts on the *Tunica Vaginalis*, but in Blowing into the Spermatick Artery of that Part, the Lymphe-Ducts are by no Means diſtended with Wind: By this, it appears the Lympheducts of the Spleen, *Penis* and Teſticles, do not ariſe from the Extremities of the Blood-Veſſels of thoſe Parts, as the Lympheducts of other Parts ſeem to do; but that the Venous Chanels of thoſe Parts ſeem to give the immediate Originations to their Lympheducts.

S, The Spleen partly made bare of its Integument.

Fig. 2.

The *Ductus Pancreaticus* injected with Wax, and free'd from the Body of the *Pancreas*, together with a Portion of the *Inteſtinum Duodenum* and Common Gall-Duct dried.

A, Part of the *Duodenum* dried.

B, The *Ductus Pancreaticus* lying between the Membranes of the Inteſtine before it joyns with the Common Gall-Duct.

C, The Common Orifice of the Gall and Pancreatick Duct opening into the Inteſtine.

D, The Common Gall-Duct.

E E, The Trunk of the Pancreatick Duct.

F G, The Ramifications of the Pancreatick Duct, which ariſe from the Extremities of the Blood-Veſſels of the *Pancreas*.

Among the Opinions hitherto held concerning the Office of the Pancreatick Juice, that of *Brunnerus* ſeems moſt probable: That like the *Saliva* it is a Diſſolvent or *Menſtruum* for a farther Concoction, in Order to Chylification. Nor can I conceive the *Succus Pancreaticus* can Act with any Hoſtility by Way of Fermentation with the Bile and Aliment, as *Franc. Sylvius*, *Bern. Swalve*, *Reg. de Graff*, and *Isbrand de Diemerbroek* apprehend; or that it takes off the Acrimony of the Gall; which Latter, would be to rectifie a Miſtake in Nature that might have been avoided in the Firſt Deſign: Wherefore the *Pancreas* appears to be a Large Salival Gland, or One of the Largeſt of the Glands of the Inteſtines, which continually ſupplies a proportionable Quantity of Liquor for the End above mention'd. Beſides, the *Pancreas* has another as it were accidental Uſe, (*viz.*) To diſcharge thoſe Seroſities from the Blood which we find in taking of Purging Medicines; Or at other Times, when the Blood is diſordered ſo that a *Diarrhœa* happens, the *Pancreas* as well as the Glands of the Inteſtines are thoſe Strainers which diſcharge the Vitiated Juices from the Maſs of Blood.

Fig. 3.

The Spleen with its Blood-Veſſels Injected with Wax.

A A, The Internal Concave Part of the Spleen next the Stomach and *Pancreas*.

B B, The Splenick Arteries Injected with Red Wax.

C C, The Veins fill'd with White Wax.

D E, The Various Flexures and Contortions of the Veins and Arteries near the Surface of the Spleen.

Fig. 4.

A, Part of the Spleen of ſome Quadrupede cut off, after the whole Spleen has been diſtended with Wind and dried.

B, The External common Membrane deriv'd from the *Peritonæum*.

C, The Internal Proper Membrane of the Spleen.

D E, &c, The Cells of its Cavernous Body, which open into the Large Veins of the Spleen.

In the Humane Spleen theſe Cells are more Numerous and Leſs, and open into the Extremities of the Veins and Arteries. I know *Ruyſch* in his Accurate *Anatomical Epiſtles* lately publiſh'd, denies the Exiſtence of theſe Cells as well as Fibres in the Humane Spleen, but if you blow into the Splenick Vein, or Inject Water by the Arteries, when the Outward Membrane of the Spleen is not torn or broke in taking it out (which are very liable to happen in freeing the Humane Spleen) you may be ſatisfied of the Exiſtence of its Cells; and if you Inject the Veins with Wax you will find this Difference from that of a Quadrupede; that the Wax in the Humane Spleen do's not reach the Cells, except it is driven on with great Force, and Injected very hot; but if you Inject Wax into the Spleen of an Ox, Dog, or the like, you will find all its Cells ſoon diſtended with it, and the great Ramifications of the Veins ſcarce to be diſtinguiſhed, by Reaſon the Wax ſo ſoon paſſes out of their Sides into the Cells.

Fig. 5.

A A, The Internal Face of the Proper Membrane of the Spleen of a Quadrupede.

B C, The Fibres broke off which paſs between the Cells to each Side of the proper Membrane of the Spleen.

D D, Some of the larger Cells of the Spleen of various Figures.

Fig. 6.

The whole Spleen free'd from its External and Proper Membranes, after its Blood-Veſſels were Injected with Wax.

A A, The Arteries.

B, The Veins of the Spleen fill'd with Wax.

a a b b, The Ramifications of the Blood-Veſſels before they enter the Body of the Spleen.

C, Part of the *Capſula* or Proper Membrane of the Spleen, according to *Bidloo*.

D, The Nervous *Plexus*.

E F, The Ramifications of the Blood-Veſſels at their Extremities, into whoſe Sides the Cells of the Humane Spleen open.

F, The *Interſtitia* at the Extremities of the Blood-Veſſels, which *Bidloo* Calls the Cells.

G G, The Extremities of the Lympheducts, and divers Fibres of the Spleen. The Texture and Compoſition of the Spleen being thus known, we ſhould in the next Place conſider what Office this Part has in the Animal Oeconomy; but that being a Task too great for the Limits of our preſent Page, I ſhall inſert my Thoughts of it elſewhere.

THE

THIRTY-SEVENTH TABLE.

Fig. 1.

THE Superior Convex Surface of the Liver here Printed on the Reverſe.

AA, The Superior Gibbous Part of the Liver, where divers Lympheducts may be ſeen.

BB, The *Ligamentum Suſpenſorium Hepatis*, faſten'd to the *Diaphragma*, its Fore-Part being cut from the Enſiformal Cartilage.

CC, Part of the *Diaphragma*; in which its Fleſhy and Tendinous Parts appear together with its Blood-Veſſels.

D, The *Ligamentum Umbilicale* pinn'd out.

EE, That Part of the Liver which is Extended towards the Left Side, and reſts on the Stomach, and is ſometimes (as in this Subject) divided into Lobes.

F, Seems to be Part of the *Diaphragma*: *Bidloo* makes it to be a Ligament that adheres to the Enſiformal Cartilage, which I can by no Means conceive.

G, A Portion of the External Membrane of the Liver, continued from the *Peritonæum*, rais'd.

Fig. 2.

The Inferior Concave Surface of the Liver.

A, The Right Side of the Liver.

B, The *Ligamentum Suſpenſorium Hepatis* pinn'd out.

C, The *Ligamentum Umbilicale*.

D, The External and Common Membrane of the Liver rais'd and pinn'd out.

E, The Liver cut into, to ſhew its Inſide.

F, Part of the Diaphragm.

G, The *Arteria Hepatica*, which we commonly find divided into Two Branches or Trunks of the Size of this here Expreſt, before they enter the Liver.

HH, The *Vena Porta* as it enters the Liver.

I, The *Capſula Communis* or Production of the *Peritonæum*, which is ſaid to incloſe the *Vena Porta*, *Arteria Hepatica*, and *Ductus Bilarii* in their Progreſs thro' the Liver; which Deſcription of it, I am apt to think, is rather impoſed on it in Favor of ſome Conjectures concerning the Office of the *Vena Porta* within the Liver, than any real Appearance of it in Nature; tho' it is very plain thoſe Veſſels within the Liver do appear cover'd with a Common Incloſure; the like of which may be ſeen on the Veſſels within the Spleen, Kidneys, *&c.*

KK, The *Vena Cava* Extended on a Pencil.

L, The Gall-Bladder.

M, A Lympheduct paſſing on the Surface of the Gall-Bladder.

N, The *Ductus Cyſticus*.

O, The Common Gall-Duct.

P, The Lympheducts of the Liver marching on the *Vena Porta* towards their Lymphatick Glands, placed on the Trunk of that Vein below the Liver.

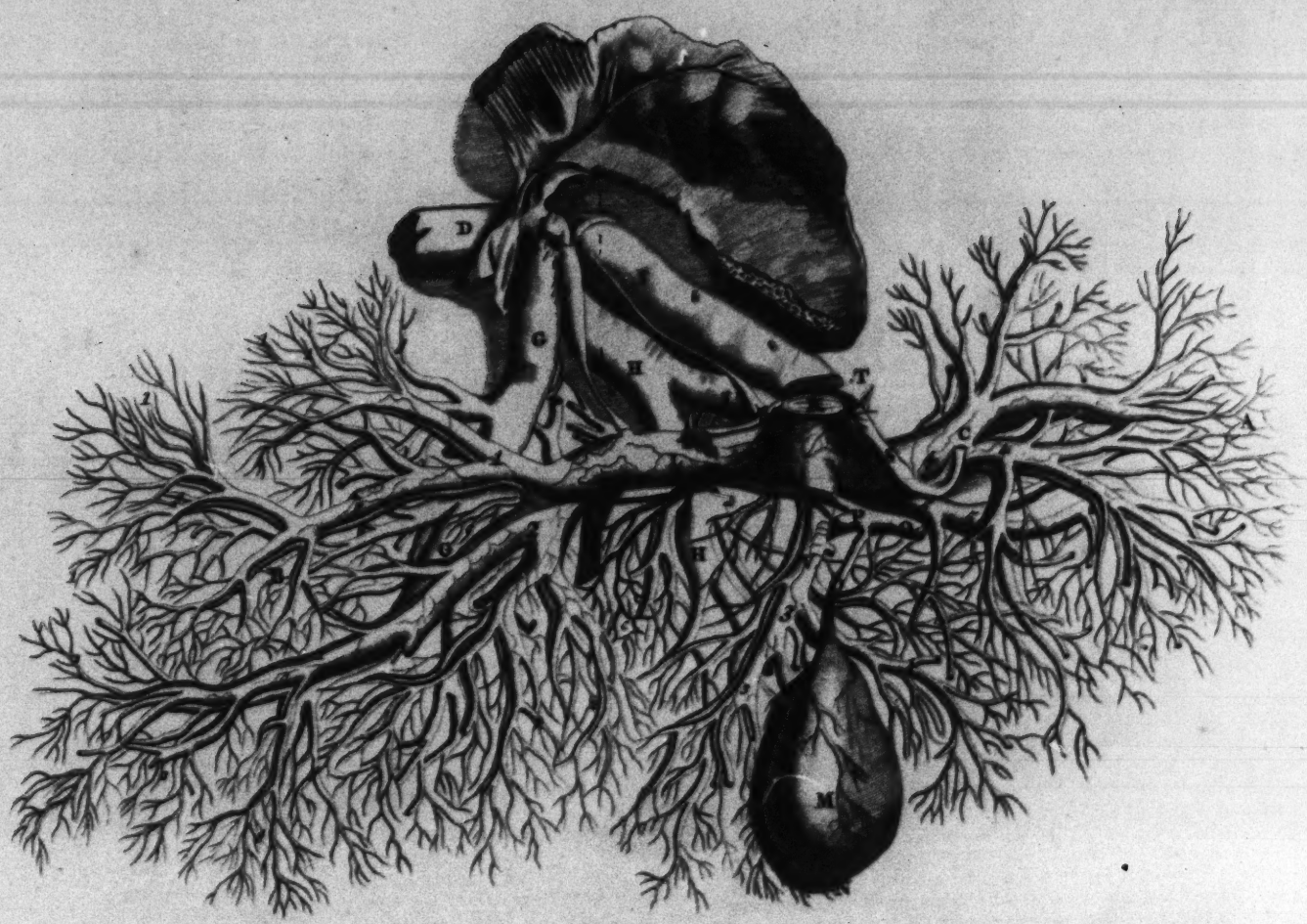
Concerning the Diſtribution of the Veſſels of the Liver, and the intimate Structure of that great Gland, conſult the following Table.

THE

Fig. 1.

Fig. 2.

Fig. 5.



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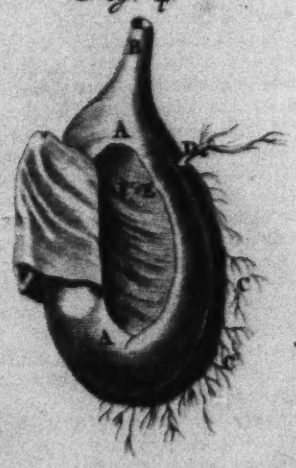

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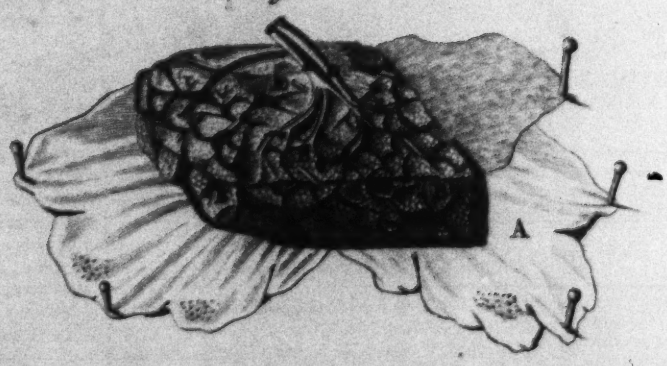

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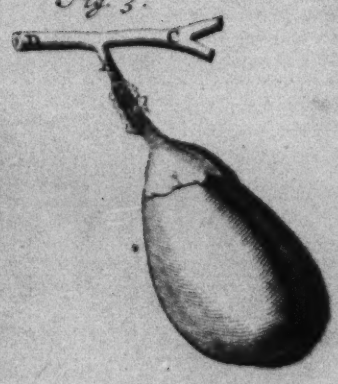

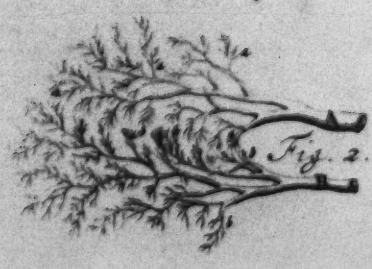

Fig. 2.

THE THIRTY-EIGHTH TABLE.

Fig. 1.

A Portion of the Liver Boyl'd and View'd with a Microſcope.

A, The Outward Membrane of the Liver Rais'd and Pinn'd out.

B B B, The *Lobuli* compos'd of ſmall Glands, of Various Figures and Sizes.

C, The Membranes continued from the Blood-Veſſels, which divide the *Lobuli* from each other.

D D, The Blood-Veſſels, of which ſome are Broken off.

E E, The Gall-Ducts, many of which are in like Manner Broken off as they Ariſe from the *Lobuli*.

Fig. 2.

A, A Branch of the *Vena Cava*.

a a, Its Extremities within the Liver.

B, A Branch of the *Vena Porta*.

b b, Its Extremities in like Manner not join'd with the former, ſays *Bidloo*. In preparing the Liver to Inject its Blood-Veſſels with Wax, I found ſuch a Communication between the *Vena Cava* and *Porta*, that I could by no means but Conceive the Extremities of thoſe Veſſels are continued Chanels; for by pouring Water or Spirit of Wine into the *Vena Porta*, with the aſſiſtance of a Tunnel only, I found it ſoon run out again by the *Vena Cava*: Nor do's the Extremities of the Arteries of the Liver ſeem leſs Communicative with the *Vena Cava*; for by Syringing Water into the Hepatick Arteries, it eaſily paſſes into the *Vena Cava*, or *Porta*. In Blowing into the Hepatick Arteries or Gall-Ducts, I commonly find the Lympheducts of the Liver Diſtended with Wind.

Fig. 3.

The Gall-Bladder and its Ducts.

A, The *Ductus Cyſticus*.

B, The Internal Membrane of the *Ductus Cyſticus* Appearing after Raiſing the External. This Internal Membrane is much Larger than the External, by which means it Frames divers Valves or *Rugæ* in the Cavity of this Duct. Theſe *Rugæ* (which ſome call Valves) prevent the perpetual Effuſion of the Bile into the *Duodenum*: Nor do they Oppoſe the Retroceſſion of the Gall by the Cyſtick-Duct, as ſome pretend; for if you either Blow, or Inject Water into the *Ductus Communis*, the Gall-Bladder ſoon becomes Diſtended. In Examining the Gall-Ducts of a Lamb's Liver, I clearly Diſcover'd divers Ducts of Gall Ariſing from the Liver, and emptying themſelves into the *Ductus Cyſticus*: Nor could I by any means obſerve in that Subject any Gall-Ducts Ariſing from the Liver, and Diſcharging their Contents into the Gall-Bladder at its Neck, as ſome pretend. I have more than once emptied the Gall-Bladder of a Humane Body, and made a Ligature on the *Ductus Cyſticus* ſome Diſtance from its Neck, and afterwards forcibly Diſtended the Hepatick-Ducts with Wind, but could by no means Raiſe the Gall-Bladder: I have alſo made the ſame Experiment in Quadrupedes with Mercury, by Injecting it by the *Ductus Hepaticus*, but could not find it come into the Gall-Bladder immediately; but in the *Ductæ Cyſticus* about a Quarter of an Inch from the Gall-Bladder, I have ſeen the Mercury Ariſe from Two or Three Gall-Ducts proceeding from the Liver.

C, The *Ductus Hepaticus* cut from the Liver.

D, Part of the *Ductus Communis*.

Fig. 4.

A A, The Gall-Bladder partly Open'd.

B, A Portion of the *Meatus Cyſticus*.

C C, Divers Blood-Veſſels Propagated between the Gall-Bladder and Liver, which *Bidloo* takes to be ſome of the Leſſer Cyſtick-Ducts.

D, One of the Larger of the laſt mentioned Veſſels, which *Bidloo* in like Manner Deſcribes as One of the Largeſt of the Cyſtick-Ducts, with its Orifice E F, looking into the Gall-Bladder.

Fig. 5.

The Blood-Veſſels of the Liver and Gall-Ducts Injected with Wax, and free'd from their Extremities which compoſe the Glands. This Scheme or Diſtribution of theſe Veſſels may be prepar'd after the following Manner. The whole Liver being taken out with the Trunks of its Blood-Veſſels left to it of a convenient length; waſh out the Blood from its Veſſels by Syringing of warm Water into Them: This done, fill the Blood-Veſſels with Spirit of Wine or Alum-Water, or Inject them with Oyl of Turpentine a little warm'd. After ſome Hours, dip the whole Liver in hot Water, and Inject Wax of a different Colour into all its Blood-Veſſels and Secretory-Ducts; the Arteries being fill'd with Red; the *Vena Porta* with a Dark Colour; the *Vena Cava* of a Diſtinguiſhable Colour; and the Gall-Ducts with Yellow Wax: This done, free the Liver of its Outward Membranes, and with your Fore-Finger begin to divide the *Lobuli* from each other, by thruſting it thro' the Glandulous Surface even to the Trunks of the Large Blood-Veſſels. The *Lobuli* of the Liver being very much divided, dip the whole in warm Water, and with a ſtubbed Bruſh, made of the ſtiffeſt Hogs-Briſtles, begin to Bruſh off the Glandules of the Liver from the Extremities of the Injected Blood-Veſſels. In doing of this be Cautious, leſt you break off the Large Trunks of the Injected Veſſels, always remembring to begin at the Surface of the Glands, and after the Extremities of the Injected Veſſels are clear'd, than proceed to their Larger Branches and Trunks. If due care is taken in managing this Preparation of the Veſſels of the Liver, you will find them more Numerous than this Figure Repreſents.

A, The Right Side of the Liver.

B, The Left.

C C, The Larger Trunks of the Hepatick Arteries Injected with Red Wax.

c c c, The Branches of the Arteries which do Accompany the *Vena Porta*, and Hepatick Gall-Ducts.

D, The Trunk of the *Vena Cava* fill'd with Green Wax.

E E, A Portion of the Diaphragm.

F G H, The Three Large Branches of the *Vena Cava* within the Liver, lying towards its Superior and Convex Surface, and not Aſſociating with the *Vena Porta* and other Veſſels, framing Acute Angles in their Interſecting thoſe of the *Porta*.

g h i, The Leſſer Branches of the *Vena Cava*.

K, The Trunk of the *Vena Porta* cut off, after being Injected with White Wax.

L L, Parts of the *Capſula* which includes the *Vena Porta*, Hepatick Arteries, and Gall-Ducts together.

1, 2, 3, 4, 5, The Large Branches of the *Vena Porta*.

M, The Gall-Bladder.

N, The Roots of the *Ductus Cyſthepatici*, according to *Bidloo*.

O, The *Ductus Cyſticus*.

P, The *Ductus Hepatius*: p, their Branches.

Q, The *Ductus Communis*.

R, Part of the *Ligamentum Umbilicale*.

S, The *Canalis Venoſus* between the *Vena Porta* and *Cava*, become a Ligament.

T, Parts of the Hepatick Nerves.

V, Some of the Lympheducts of the Liver Marching on the *Capſula* of the *Vena Porta*.

Hence it Appears the Liver is a Glandulous Body compos'd of Blood-Veſſels, Excretory-Ducts, Nerves and Lympheducts. The Veſſels which Import Blood into it, are the *Vena Porta* and *Arteria Hepatica*; at their Extremities Ariſe, or are Continued, the Branches of the *Vena Cava*: Nor are the Extremities of the Blood-Veſſels of the Liver equally leſſen'd like the Veins and Arteries of other Parts, as the above mention'd Experiment of pouring Water only into the *Vena Porta*, and its running out by the *Vena Cava* do's Evince; or by gentle Syringing Water by the Hepatick Arteries, and its eaſily paſſing by the *Vena Cava*; ſo that the Extremities of the Hepatick Blood-Veſſels ſeem to be largely Inoſculated with each other, eſpecially the *Vena Porta* with the *Cava*. The Gall-Ducts Ariſe from the Extremities of the Blood-Veſſels, and tho' they Communicate immediately with the Blood-Veſſels, yet Liquors convey'd into the *Vena Porta* and the like, do not ſo readily paſs into theſe Ducts as the other Blood-Veſſels; becauſe the *Ortiolæ* in the Sides of the Blood-Veſſels whence thoſe Ducts Ariſe, are much leſs than the Pore of thoſe Veſſels themſelves. Beſides the Blood-Veſſels of the Liver, which are furniſh'd with Pores for the Secretion of the Gall, there are ſtill other Branches of the ſame Veſſels which Adminiſter a proper Nouriſhment to the Gland it ſelf. By *the Gland it ſelf*, I mean the *Parietes* of thoſe Veſſels which compoſe the Liver: For I cannot conceive the Liver to be any thing elſe then a *Compages* of Veſſels more or leſs Diſtended. As there is a proper Nouriſhment due to *the Gland it ſelf*, ſo it is Neceſſary, that beſides its Secretory-Ducts, the Liver ſhould be alſo furniſh'd with Lympheducts, to carry off the Redundancy of its Nutritive Juice, continually ſupplied by the Arteries; but of this elſewhere. The Nerves are neceſſary in the Liver, as they are in all Parts where Membranes are Uſeful; not becauſe they Import any Liquor as ſome conceive, as an Ingredient to the Matter ſeparated; but by the Nerves the Tone of Parts is in a great Meaſure maintain'd; for if the Nerves are Relaxt, the Parts to which they belong, ſuffers an *Atrophia*, tho the Blood has its free Acceſſion to the Part as before; but of this alſo in another Place.

In Diſſecting a Morbid Body which before Death was much afflicted with Hypochondriack Pains, I found the Liver very much leſſen'd, and its Surface uneven, not unlike a heap of ſmall Bullets. In Diſſecting the Body of a Noble-Man afflicted with the like Pains, I found that Part of the Liver which Appears below the Cartilaginous Endings of the Ribs, of a Livid Colour, and the whole ſomewhat Leſſen'd, the Gall-Bladder very much Contracted, and fill'd with Two or Three ſmall Stones; the *Peritonæum* on the Parts adjacent being much Thickned, and its Blood-Veſſels Turgid. In the Body of a Young Lady (reduc'd to a *Marasmus* from a Scrophulous Indiſpoſition) I found the whole Surface of the Liver very Black. In a Perſon who is now Living, and in tollerable Health, I could Three Years ſince diſcover (by feeling the Right *Hypochondrium*) the Lower Part of the Liver exceedingly Tumified and Hard; which is now intirely Vaniſh't.

THE
THIRTY-NINTH TABLE.

Fig. 1.

PART of the *Jejunum* or Hungry Gut, together with a Portion of the Meſentery, *&c.*

A A, The Surface of the *Jejunum* Cover'd with its External Membrane continued from that of the Meſentery, it being produc'd from, or a continuation of the Internal *Lamina* of the *Peritonæum*.

B B B, The *Vaſa Lactea* not Extended, being here Expreſt by ſimple Lines only, as they paſs from the Inteſtines thro' the Meſentery.

The Lacteal-Veſſels carry both *Chyle* and *Lympha* Promiſcuouſly, and have a Two-fold Origin; the One from the Extremities of the Arteries; the Other from divers *Oſtiolæ* in the Cavities of the Guts: The Former Appears not only by Injecting of Mercury by the Arteries of the Meſentery D, and its paſſing into the Lacteals B; but when theſe Milky-Veſſels are not imploy'd in conveying of *Chyle*, they are conſtantly charg'd with *Lympha*: The Latter Origin of theſe Milky-Tubes from divers *Oſtiolæ* in the Cavities of the Guts, Appear in their receiving of *Chyle* from thence. The *Lympha* from the Arteries meets with the *Chyle* at the beginnings of the Lacteal-Veſſels, by which means its Progreſs towards the next Lymphatick Gland is promoted: The *Vaſa Lactea primi generis*, Ariſe with Capillary Branches very much Divided, and become United into large Trunks, in the Mid-way between the Inteſtine and Lymphatick Gland; and are ſometimes again Divided before their Entrance into the *Veſiculæ* of the Gland. The *Chyle* and *Lympha* thus receiv'd into the *Veſiculæ* of the Meſenterick Glands, there meets with other *Lympha* brought into thoſe *Veſiculæ* by the Arteries; whereby the *Chyle* is not only more diluted, but its Aſcenſion towards the *Veſica Chyli* is promoted, by its receiving a freſh *Impetus* from the *Lympha* ſo mixing with it. Thus we may conceive the Progreſs of *Chyle* towards the *Receptaculum Commune* is carri'd on, by means of the *Lympha* joining with it in its ſeveral Stages thither. Nor would the Valves of the Lacteal-Veſſels be of any conſiderable Uſe, if the *Chyle* did not receive an Additional *Impetus* from the Arteries in their ſupplying it with freſh *Lympha*, as well in the Lymphatick Glands, as at the Beginnings of the *Vaſa Lactea primi generis*.

C, The External Membrane of the Inteſtine Rais'd and Pinn'd out.

C C, The Muſcular Membrane of the Inteſtine lying immediately under the External Membrane conſiſting of a Longitudinal and Circular Order of Fibres.

D D, The Meſenterick Arteries Propagated to the Inteſtine.

E E, The Veins which Ariſe from the Extremities of the Arteries, and diſcharge the Refluent Blood into the *Vena Porta*.

F, A Branch of the Meſenterick Nerve made bare.

G G, The *Vaſa Lactea primi generis*.

H, The External Surface of the Inteſtine Adorn'd with Blood-Veſſels.

I I, The Glands of the Meſentery into whoſe *Veſiculæ* the *Vaſa Lactea primi generis* Import their Contents, as aboved noted; whence the *Vaſa Lactea ſecundi generis* Ariſe, and convey their Contents in like manner, either into the *Receptaculum Chyli* immediately, or into the *Pancreas Aſellii*. Tab. 40. L, Fig. 1.

Fig. 2.

A Portion of the *Jejunum* dri'd after being Diſtended with Wind, whereby its *Valvulæ Conniventes*, fram'd by the looſneſs of its Inward Membranes Appear as here Repreſented.

A B C D, The Various Diſpoſition of the Valves in the Cavity of the Inteſtine; ſome of them taking up near Two Thirds of the Circumference of the Inſide of the Gut, A, Inferior: Others B D, about a Fourth Part; whilſt others are Semicircular.

As the Upper Part of the *Duodenum* next the *Pylorus* is Furniſh'd with large Valves, ſo they gradually Decreaſe in the ſmall Guts as well in Magnitude as Number, as they approach the Lower Parts of thoſe Inteſtines towards the *Colon*: Hence the *Valvulæ Conniventes* of the *Duodenum* are very Large; that at the *Pylorus* being Circular; The Valves of the *Jejunum* leſs; thoſe of the *Ilium* ſtill leſs; inſomuch, that the Lower Part of this Gut next the *Colon* ſcarce affords any Appearance of them: See *Fig.* 3.

Theſe Valves are compos'd of the Internal Membranes of the Inteſtines, which being much larger then the Exterior, are neceſſarily laid up in Foldings, and Frame theſe Parts. Theſe Connivent Valves hinder the quick Deſcent of the Contents of the Inteſtines, leaſt the *Chyle* as well as the Excrementitious Parts ſhould eſcape the Mouth of the Lacteal Veins.

Fig. 3.

A Portion of the *Ilium* dri'd after Inflation.

A A, The External Surface of the Inteſtine.

B, The Internal ——

C C, The Valves of this Inteſtine much leſs then in the *Jejunum*.

D, That end of the *Ilium* next the *Jejunum*.

E E, That next the *Colon*.

Fig. 4.

The Beginning of the *Colon*, Extremity of the *Cæcum*, together with a Portion of the *Ilium* dri'd after Inflation.

A A. The *Cæcum* Adorn'd with its Blood-Veſſels.

B B, The *Colon* plac'd in the Right *Ilia* G G, *Tab.* 33. and C, *Tab.* 40.

C C, Its Blood-Veſſels Injected with Wax.

D, A Portion of the *Ilium* as it enters the Beginning of the *Colon*.

Fig. 5.

The ſame Parts of the *Colon*, *Ilium*, and *Cæcum*, Expreſt in the precedent Figure, Open'd to ſhew the Valves of the *Colon*, and the entrance of the *Ilium* into the *Colon* as they Appear after Inflation and drying them.

A, The Valve at the Orifice of the *Cæcum* in the *Colon*.

B B, The *Colon* Open'd to ſhew its Inſide.

C C, The Blood-Veſſels Injected with Wax.

D, Part of the *Ilium* before it enters the Cavity of the *Colon*.

E E, The End of the *Ilium* which hangs down looſe into the Cavity of the *Colon*, as Appears before drying of the Guts, which here Frames an Appearance of a Connivent Valve.

F, The Orifice of the *Ilium* Opening into the *Colon*.

By this Contrivance we may eaſily conceive how the Excrements, when they have paſt the Small Guts into the *Colon*, cannot return again: A likeneſs of which, may be imitated if you take a Piece of Gut and put One End of it into the Neck of a Bottle, and tying the other end of the Gut on the Outſide of the Noſel of the Bottle, filling the Bottle with Water by that Gut; and tho' you afterwards turn the Noſe of the Bottle downwards, yet no Part of the contain'd Water can come out, till it has ſo Preſt out the end of the Gut in the Bottle that it becomes Inverted. This may ſerve to give us an *Idea* how it may happen in this Part when the Excrements are rejected by the Mouth in Cholick and Iliack Paſſions.

G G, The large Valves of the *Colon*, which like thoſe of the ſmall Guts are partly Fram'd by the Looſneſs of the Internal Membrane of the Gut; and are here in the *Colon* chiefly made by a Corrugation or Folding of the Membranes of the Gut it ſelf, by means of its Ligaments, *Tab.* 40. *Fig.* 1. D, and *Tab.* 54. d d. Theſe Ligaments of the *Colon* are truly Fleſhy Fibres, and I am apt to think are capable of contracting themſelves and promote the paſſing on of the Contents of this Gut. When the Ligaments of the *Colon* are divided, the Foldings of it which help to compoſe its Valves, are looſned, and the whole Gut becomes almoſt plain without any Inequalities. As the Ligaments of the *Colon* Deſcend towards the *Rectum* they begin to Expand themſelves, and at length Frame an External Membrane for the *Rectum*.

H H, The Internal Concave Surface of the Cells of the *Colon*.

I I I, The External Convex Surface of the Cells of the ſame Gut.

Fig. 6.

A Portion of the *Rectum* with Part of the Meſentery continued to it.

A A B B, The External Surface of the *Rectum*, on which the Ligaments of the *Colon* compoſe a Tegument, whoſe Fibres are very ſtrong, and are Extended according to its Length.

C C D D, The Fatty Appendages, whoſe Extremities have divers Figures.

E, The Meſentery.

F G, The Trunks of the Blood-Veſſels.

Fig. 7.

The *Rectum* Divided according to its Length, and Expanded to ſhew its Inſide.

A B, *&c.* The Internal Tunicle of the *Rectum*, which being much larger than the External, neceſſarily Appears in many Folds in this Poſition. This Internal Tunick of the *Rectum* is compos'd of a vaſt Number of Glands, to which divers Blood-Veſſels belong; of theſe, the Veins are conſiderably Large and are commonly fill'd with Blood, by reaſon of their Poſition and the Blood Aſcending directly in them; whence it happens they become very much Diſtended when the Blood do's not readily paſs on in their Superior Trunks; or when any ſharp Humor Affects this Membrane, theſe Veins become Tumified, and ſometimes diſcharge their Blood, and are call'd *Hæmorrhoides Apertæ*; if no Blood flows from thoſe Tumified Veins, they are call'd *Hæmorrhoides Cæcæ*. The Glandules imploy'd in ſeparating a Matter to Lubricate the Inſide of the *Rectum*, and cauſe the Excrements, tho' very much harden'd to paſs off eaſily, are in this Caſe alſo very much Swell'd, and a great Quantity of *Mucus* flows from them: Hence the whole Inward Membrane of the *Rectum* becomes much Thickned, and when preſt down beyond the Stricture of the Sphincter Muſcle of the *Anus*, it is call'd *Procidentia Ani*. Tho' it is commonly ſuppos'd the Outward Membrane of the *Rectum* as well as the Internal, is driven out in a Common *Procidentia Ani*; yet the following Caſe ſeems to evince the contrary, and that it is the Internal Membrane of the *Rectum* only that is then Prolaps'd.

A Gentleman of about Twenty Seven Years of Age, had for ſeveral Years been very much Afflicted with the *Hæmorrhoides* and a *Procidentia Ani*, who after a ſudden Debauch had a great Inflamation and Tumor Affected the *Anus*, attended with great Pain: In the ſpace of Twelve Hours, the Parts about the *Anus* Appear'd of a Livid Colour; ſoon after a Mortification follow'd. The Sphincter Muſcle of the *Anus* being Relaxt, a *Procidentia Ani* follow'd; the Prolapſed Inteſtine (being expos'd to the Matter which flow'd from the Adjacent Parts) ſoon ſuffer'd Mortification. The Patient after ſome Weeks recover'd his uſual Strength, and in a few Months became perfectly Well. Nor did any inconveniency follow by reaſon of the Mortification of the Prolapſed Inteſtine; but on the Contrary, He continued Well, and was free'd not only from the Habitual *Hæmorrhoides*, but was afterwards free'd from a *Procidentia Ani*.

Fig. 4

Fig. 5

Fig. 2.

Fig. 3

Fig. 1.

Fig. 7.

Fig. 6.

T. 40.

Fig. 1.

THE FORTIETH TABLE.

Fig. 1.

THE Trunk of the Body lying in a Supine Posture, and some of the *Viscera* of the *Abdomen* Expos'd to View.

A A, The Common and Proper Integuments of the *Abdomen* Dissected.

B, The Under-side of the *Omentum* as it Appears when Rais'd and remaining Contiguous to the *Colon.*

C C, The *Colon* at its Beginning in the Right *Ilia,* and in its Progress over the Right Kidney, by the *Pylorus* and under the Bottom of the Stomach: The farther Progress of this Intestine is commonly so well Describ'd, that we need not say more of it in this Place.

c c, The *Cæcum.*

D, That Part call'd One of the Ligaments of the *Colon,* which we take to be Compos'd of Fleshy Fibres, *&c.*

E E, The *Intestina Tenuia,* or Thin Guts, which are the *Duodenum Jejunum,* and *Ileum*; to these some add the *Cæcum.*

F F, The *Intestina Crassa,* or Thick Guts, are the *Colon* and the *Rectum*; to these the *Cæcum* is commonly reckon'd.

G H I, The Mesentery to which the Intestines are Contiguous. The Mesentery is Compos'd of divers *Strata* of Membranes, the outwardmost of which, on both Sides of it, is a Continuation of the Internal Membrane of the *Peritonæum*; between these are plac'd divers Membranaceous *Loculi,* which Include its Glands K K: This Internal Part of the Mesentery is by some Esteem'd as a Third Membrane proper to this Part. The Rise or Connexion of the Mesentery to the Stable Parts, is at the Three Superior *Vertebræ* of the Loins on both Sides the *Arteria Magna,* where it sends out the *Arteria Cœliaca* and *Mesenterica Superior.* Besides Blood-Vessels, the Mesentery is plentifully furnish'd with Lympheducts and Nerves; the Latter are well Describ'd by Dr. *Willis* and *Vieussenius*; the Lympheducts are mention'd in the precedent Table; its Arteries are Figur'd in our *Appendix*; its Veins Correspond to them, and discharge their Blood into the Liver by the *Vena Porta.*

K K, The Glands of the Mesentery thro which the *Chyle* and *Lympha* passes to the *Receptaculum Chyli.*

L, A Large Gland of the Mesentery near the *Receptaculum Chyli,* call'd by *Asellius, Pancreas.*

M M, The Fat which in Humane Bodies is commonly very plentifully plac'd between the Membranes of the Mesentery. In some Quadrupedes, especially in Dogs, the Fat only Accompanies the Trunks of the Blood-Vessels of the Mesentery.

Fig. 2.

This Figure is Copied from *Bourdon*'s Third Table, *Fig.* 1.

A A A, The Mesentery in which its Vessels and Glands are here only Expresst.

B B, The Intestines.

C D, The Glandules of the Mesentery, thro' which the *Chyle* and *Lympha* pass together from the Intestines to the *Receptaculum Chyli.* C D, Those Glands which receive the Contents of the *Vasa Lactea Primi Generis*; F, That plac'd near the *Receptaculum Chyli* which receive the Contents of the *Venæ Lacteæ Secundi Generis.* A A, Inferior, Denote the *Venæ Lacteæ Primi Generis.* A, Superior and E, Represents the *Venæ Lacteæ Secundi Generis.* E, Superior, Part of a Lympheduct Arising from the Spleen.

G, Part of the *Receptaculum Chyli,* or the Beginning of the *Ductus Thoracicus.*

H, The *Arteria Mesenterica.*

I, The *Vena Mesenterica.*

A further Description of the *Receptaculum Chyli* and *Ductus Thoracicus,* is Inserted in the *Appendix, Fig.* 11, 12.

Fig. 3, 4.

Shew the different Insertions of the Thoracick-Duct into the Lower Side of the Left Subclavian Vein; which in these Figures are Erroneously Expresst in the Right Subclavian.

E E, The Subclavian Veins.

F F, The Thoracick-Ducts.

Fig. 5, 6.

A B B, One of the Lacteal-Vessels Blow'd up and Dri'd, in which the Valves Appear at a greater Distance from each other, then in a Lympheduct prepar'd in the same Manner, *Fig.* 6.

THE

FORTY-FIRST TABLE.

SHEWS the reſt of the *Viſcera* as they Appear within the Cavity of the *Abdomen*, after the Inteſtines together with the Meſentery, are remov'd.

A A, The Lower Parts of the Kidneys. It's well known the Kidneys are thoſe Parts which ſeparate the Urine from the Blood; whence it is Convey'd by the Ureters into the Bladder of Urine. Concerning the Structure of the Kidneys; See *Tab.* 43.

B B, The Ureters partly Cover'd with Fat, in their way from the Kidneys to the Bladder of Urine.

C, The Bladder of Urine ſomewhat Diſtended.

D D, The Spermatick Vein and Artery on both Sides Involv'd with Fat and Membranes, as they paſs towards the Teſticles.

E, The Right Side of the *Scrotum*, with the Teſticle of that Side remaining in it. This Right Side of the *Scrotum* is Diveſted from the Left by a *Suptum Intermedium*, mention'd by the Accurate *Ruyſch*.

F, The Left Teſticle taken out of the *Scrotum*.

G, The Bottom of the Stomach *in Situ*.

H H, The Liver *in Situ*.

I, The *Pancreas* as it Appears in its Proper Situation after the Inteſtines are remov'd.

K, A Portion of the *Duodenum* cut off and tied below the Inſertion of the Gall and Pancreatick Ducts.

L, The Lower Part of the *Rectum* in like Manner tied up.

M, Part of the Meſentery according to *Bidloo*.

N, The Deſcending Trunk of the *Arteria Magna*.

O, The Aſcending Trunk of the *Vena Cava*.

P, The Internal Surface of the *Peritonæum*, as it Appears when Divided in a Crucial Manner, together with the Common and the reſt of the Proper Integuments of the *Abdomen*. In the Upper Part of this Appearance of the *Peritonæum*, the *Fibres* of the *Muſculus Tranſverſalis* may be ſeen as they lie under it.

Q Q, The Fat withinſide the Skin.

R R, The Superior and Inferior Parts of the *Muſculus Rectus Abdominis*, Divided as above Noted.

S, The Lower Part of the Spleen *in Situ*.

T, The Trunk of the *Arteria Meſenterica Superior* cut off near the *Aorta*.

V, A Portion of the *Arteria Meſenterica Inferior* in like Manner Divided.

W, The Umbilical Ligament of the Liver turn'd Upwards, and not free'd from its Incloſing Membranes.

THE


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THE

FORTY-SECOND TABLE.

REPRESENTS the Kidneys, Teſticles, Bladder of Urine, and Spermatick Veſſels, free'd from the Body and Diſplay'd.

A A, The Right Kidney:

B B, It's *Membrana Adipoſa* partly Separated.

C C, The Left Kidney free'd from the *Membrana Adipoſa.*

D D, The *Glandulæ Renales*: After frequent Injecting of Wax into the Veins of a *Fœtus*, I have conſtantly found the Cavities of theſe Glands fill'd with the Wax. If you Blow into the Veins of a *Fœtus*, the Glands of the Kidneys will ſoon become Diſtended with Wind: Theſe Glands are ſoft and and Membranous in the *Fœtus*, in the Adult very hard, and proportionably Leſs, and not capable of being Diſtended by Blowing into their Veins; nor do's any Fluid Injected by the Veins, of an Adult, paſs into the Cavities of theſe Glands. The *Glandula Renalis* of the Right Side has Arteries from the Emulgent, and *Arteria Phrenica.* The Gland of the Left Kidney has divers ſmall Arteries from the Deſcending Trunk of the *Arteria Magna*: Their Veins are Two Trunks; One to each Gland, that of the Right Side Ariſing only from the Gland of the Kidney it ſelf, is Leſs than the Left, and empties its ſelf into the Aſcending Trunk of the *Vena Cava*, above the Emulgent Vein; that of the Left, Ariſes from the Arteries of the Neighbouring Parts, as well as from thoſe of the Gland it ſelf, and Diſcharges its ſelf into the Left Emulgent Vein K.

1 E, The *Arteria Cœliaca* cut off near its Origin.

2 E, The Trunk of the *Arteria Meſenterica* in like Manner cut off.

2 F, The Deſcending Trunk of the *Aorta* below the Kidneys.

F F, The External Iliack Branches of the Great Artery.

G G, The Aſcending Trunk of the *Vena Cava* below the Kidneys.

g g g, The Iliack Branches of the *Vena Cava.*

X G, The Spermatick Artery of the Right Teſticle, which commonly Ariſes from the Fore-part of the *Aorta* near the Beginning of the Left Spermatick Artery; but in the Subject whence this Figure was taken, it ſeems to Ariſe with Two Trunks from the Right Emulgent Artery, or elſe the Operator committed a Miſtake in Diſſecting theſe Parts here Expreſt. In all the Subjects I have hitherto Examin'd, I have conſtantly found the Spermatick Arteries to Ariſe near each other, on the Fore-part of the *Aorta*, as is Expreſt on the Left Side, and commonly Deſcrib'd by Anatomiſts. *Riolan* tells us he has obſerv'd One of the Spermatick Arteries to Ariſe from the Emulgent; the like I have more than once thought I had ſeen, but upon ſtrict Examination, I found it a Branch from the Emulgent Artery, Deſcending in the Duplicature of the *Peritonæum* with the Spermatick Artery and Vein; nor could I obſerve any Inoſculation between it and the Spermatick Artery.

The Spermatick Arteries being very ſmall as they Ariſe out of the *Aorta*, I don't much wonder that they have eſcap'd the Eyes of the leſs Accurate Diſſectors, and give them occaſion to ſuppoſe they were ſometimes wanting.

†G, The Spermatick Vein of the Right Teſticle, Ending in the *Vena Cava*, as I have conſtantly Obſerv'd it.

x F, The Left Spermatick Artery Ariſing from the Fore-part of the Deſcending Trunk of the *Aorta* towards the Left Side.

†F, The Spermatick Vein of the Left Teſticle which empties it ſelf into the Left Emulgent Vein in one Trunk moſt commonly; but ſometimes I have ſeen it, as in this Figure, Divided a little below the Emulgent Vein.

H H, The Ureters of their common Size Deſcending from the Kidneys to the Bladder of Urine.

I, The Urine Bladder Diſtended with Wind.
K, The Left Emulgent Vein.
I, The Emulgent Artery of the Right Side.
M, Part of the *Arteria Meſenterica Inferior.*
N N, The Teſticles.
O, The *Epididymis* of the Left Teſticle.
P P, The *Vaſa Deferentia* free'd from the *Tunica Vaginalis* of the *Preparantia.*
2 2, Divers Blood-Veſſels Propagated to the *Peritonæum* from the Spermatick Veſſels.

THE FORTY-THIRD TABLE.

Fig. 1.

THE External and Inferior Side of the Left Kidney.

A A B B, The Proper Membrane of the Kidney covering above Two Thirds of its Body: The Superior Part of the Kidney being free'd from its Membrane, some *Vestigiæ* of its *Lobuli* (when in the *Fetus*) do Appear.

C, The Emulgent Artery Pinn'd out.

D, The Emulgent Vein Pinn'd out.

E, The *Ureter*, and its Expansion within the Kidney, call'd the *Pelvis*, made bare.

Fig. 2.

A A, The Concave Part of the same Kidney Represented in the former Figure, Open'd, to shew the Ramifications of its *Pelvis*.

B B, The Blood-Vessels.

C C, The *Ureter* and its *Pelvis* Branching within the Body of the Kidney. A piece of a Tobacco-Pipe being Inserted to the Superior Branch of the *Pelvis*.

Fig. 3.

Half of the Kidney when Divided according to its Length.

A A, The External Convex Surface and Glandulous Part of the Kidney.

B B C C, The *Tubuli Urinarii* Arising from the Glands of the Kidney in their Way towards the *Papillæ*.

D, Half of the *Pelvis* Expanded, so that the Beginning of the *Ureter* from it may be seen.

E, The *Ureter* hanging down.

F, The Blood-Vessels of the Kidney.

The Proper Membrane of the Kidney is here Pinn'd out.

Fig. 4.

The Kidney Divided thro' its whole Length, from its Back to the *Pelvis*.

A A, The Urinary Tubes as they Appear in divers Classes, in their Way towards the *Papillæ* in the *Pelvis*.

B C, The Glands and Urinary Tubes Interspers'd with the Blood-Vessels of the Kidney.

D, The *Pelvis* or *Infundibulum* Open'd, so that the going out of the *Ureter* may be seen.

d, The *Ureter*.

E E, The *Caruncule Papillares* compos'd of the Endings of the Urinary Tubes, which open into the Branchings of the *Pelvis*, into which the Urine is discharg'd, in Order to its being transmitted to the Bladder of Urine by the *Ureter*.

e e, The Fat within the Kidney lying on the *Pelvis*.

Fig. 5.

The Blood-Vessels and Urinary Tubes of the Kidney Express't by a Microscope.

A, The Proper Membrane of the Kidney.

B B, The Ends of the Blood-Vessels broke off.

C C, The Blood-Vessels of the Kidney which help to compose its Glands.

D D, The Glands of the Kidney compos'd of Blood-Vessels, Urinary Tubes, Nerves and Lympheducts.

The Nerves of the Kidneys as well as of other Glands in the *Abdomen* furnished with Excretory Ducts, are very few, and their Trunks very small; nor do's any exquisite Pains affect the Kidneys themselves, tho' Stones compos'd of divers Angles are lodg'd in their Glandulous Parts; but the Parts whose Nerves are Complext with those of the Kidneys, suffer most in such Cases. Tho' we reckon the Nerves among the Parts which compose the Glands of the Kidneys, yet we cannot think they are any otherwise Useful here, than Subservient to the other Vessels which are immediately imploy'd in the Secretion of the Urine, as the Blood-Vessels and Urinary Tubes; which are the Parts Organiz'd for Separating the Urine from the Blood. Nor are the Lympheducts otherwise imploy'd here than we have elsewhere taken Notice of, as in the Liver; to carry off Part of the *Succus Nutritius* which is constantly convey'd to the Gland it self. How these Parts are Organiz'd, the following Experiments may a little Inform us.

If you Blow into the Emulgent Artery, the Wind will pass into the Vein of that Name, *Ureter*, and Lympheducts; the the like will happen if you Blow either into the *Ureter* or Emulgent Vein. If you Inject Mercury, all these Vessels will in like Manner be Distended. If you Syringe Water into the Emulgent Arteries, it will at first pass the Veins and *Ureter*; but if you continue Injecting it for any time, the whole Kidney will at Length become Distended, and the Water will no longer pass off again by those Vessels. Hence it Appears the Blood consisting of Globular Bodies, (Proportionated to the Magnitude of the Extremities of the Vessels moving in the *Serum*) readily pass on by a Succession of *Globules* still driving others before them; whilst the Urinary Tubes (as they Arise with small Orifices from the Sides of the Extremities of the Blood-Vessels) receive the Thinner or Urinous Part of the Blood, and Discharge it into the *Pelvis* of the Kidney. In the Body of a Person of the First Rank I lately Dissected, I found the Left Kidney Large, its Texture very Loose; and by Blowing into its *Ureter*, the Emulgent Vein very suddenly became Distended: In this Person among other Disorders, he had near Twenty Years before his Death, very Feculent Urine: If his Urine was Evaporated by Heat as in a Spoon over a Candle, its Feculent Part became still thicker; by which it appear'd the Nutritious Parts of the *Serum* of the Blood as well as the Urinous Part, past off by the too great Laxity of the Urinous Pores in the Sides of the Blood Vessels in the Kidney.

E, The Urinary Tubes in their way from the Glands to the *Papillæ*.

F, The Extremities of the Blood Vessels which Compose the Glands of the Kidney.

G, The Urinary Tubes Composing the *Papillæ*, where their Mouths open into one of the Branches of the *Pelvis*.

H, A Branch of the *Pelvis* cut off.

Fig. 6.

A A, The Internal Concave Part of the Kidney opened.

B, Part of the *Ureter*.

C, The *Pelvis* free'd of the Kidney.

D D, The Branches of the *Pelvis* within the Kidney also made bare.

E E, The Urinary Tubes which Arise from the Extremities of the Blood Vessels of the Kidney, and open into the Branches of the *Pelvis*, Composing the *Papillæ*.

Fig. 7.

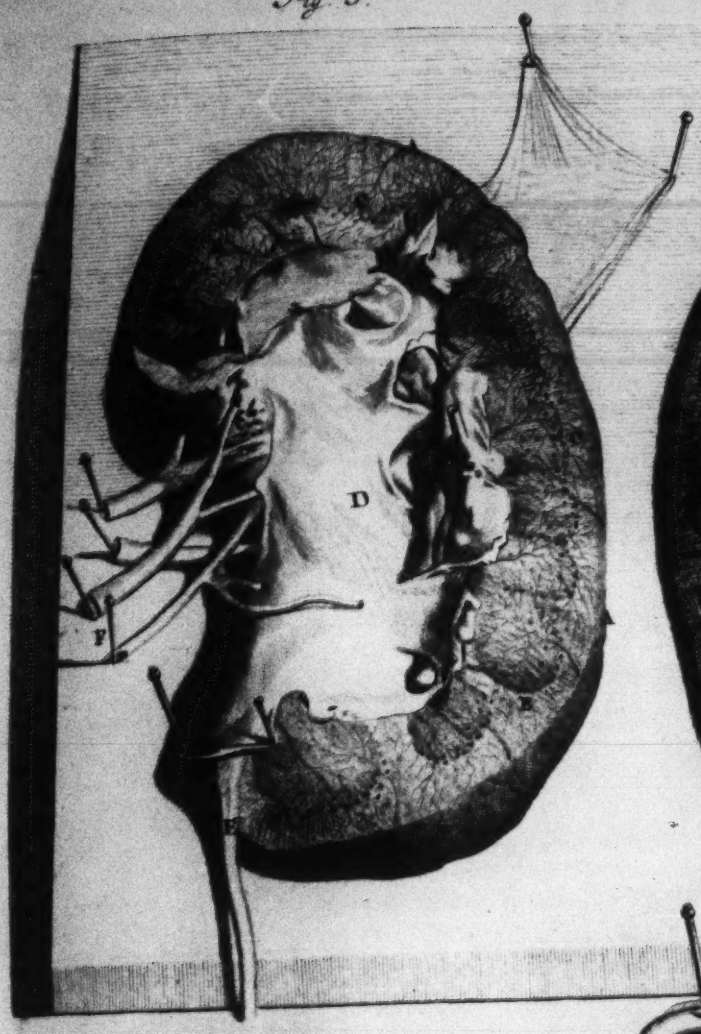
The *Ureter*, *Pelvis* and its Ramifications free'd from the Kidney and dried.

A, Part of the *Ureter*.

B, The *Pelvis* or Beginning of the *Ureter* lying within the Body of the Kidney.

C D, The Ramifications of the *Pelvis* cut from the *Corpora Papillaria*, or Endings of the Urinary Tubes.

Fig. 3.



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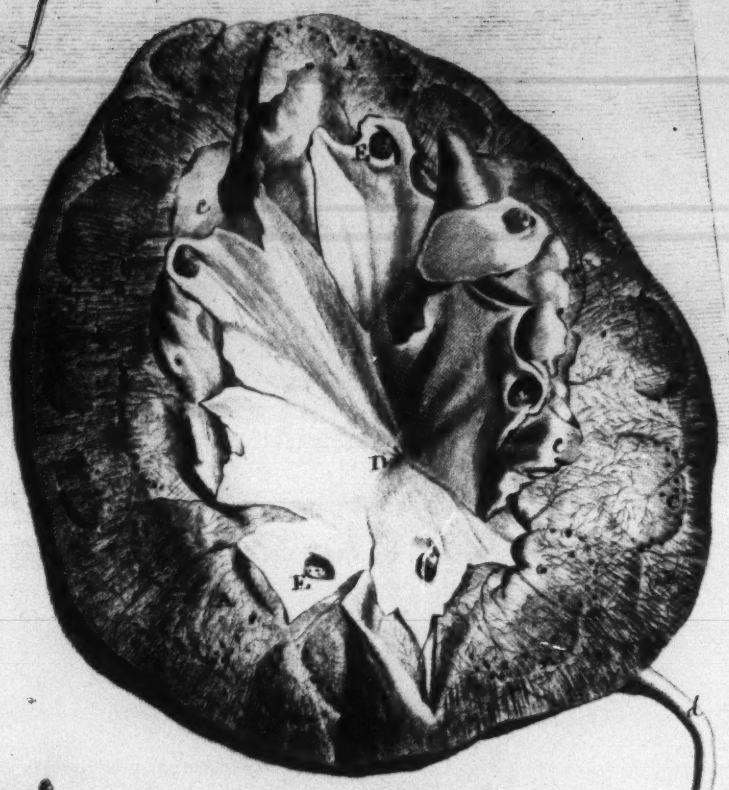

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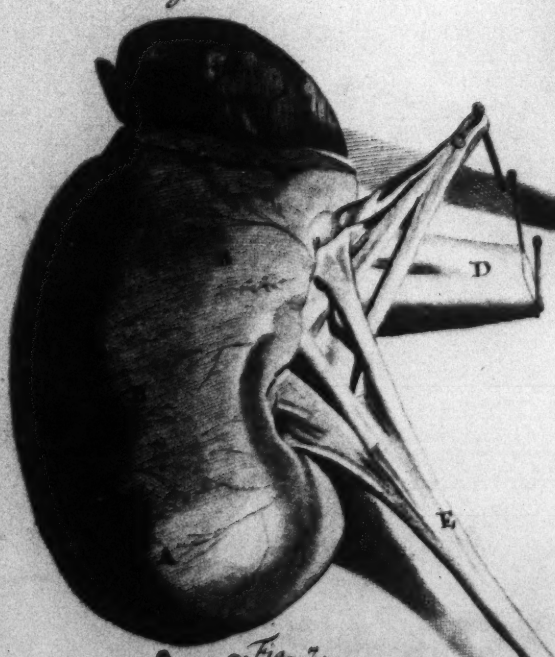

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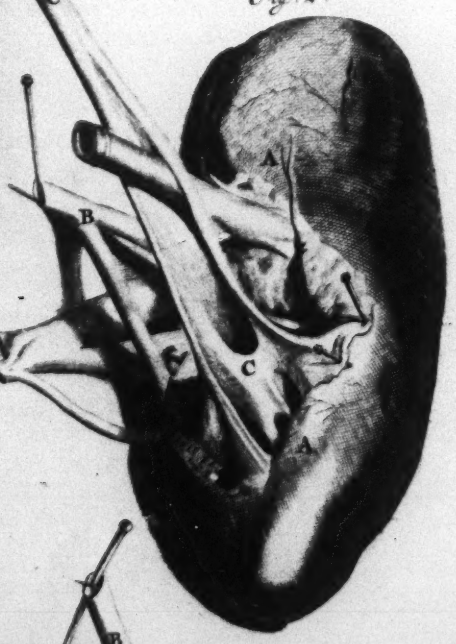
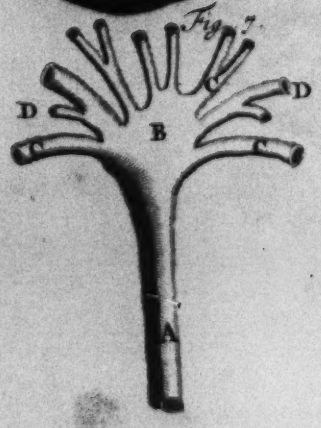


Fig. 5.

Fig. 7.



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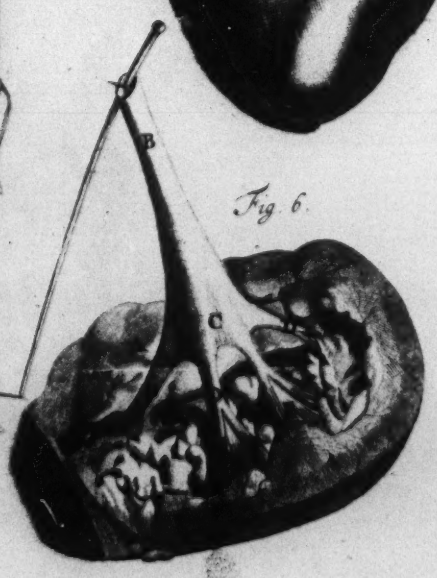

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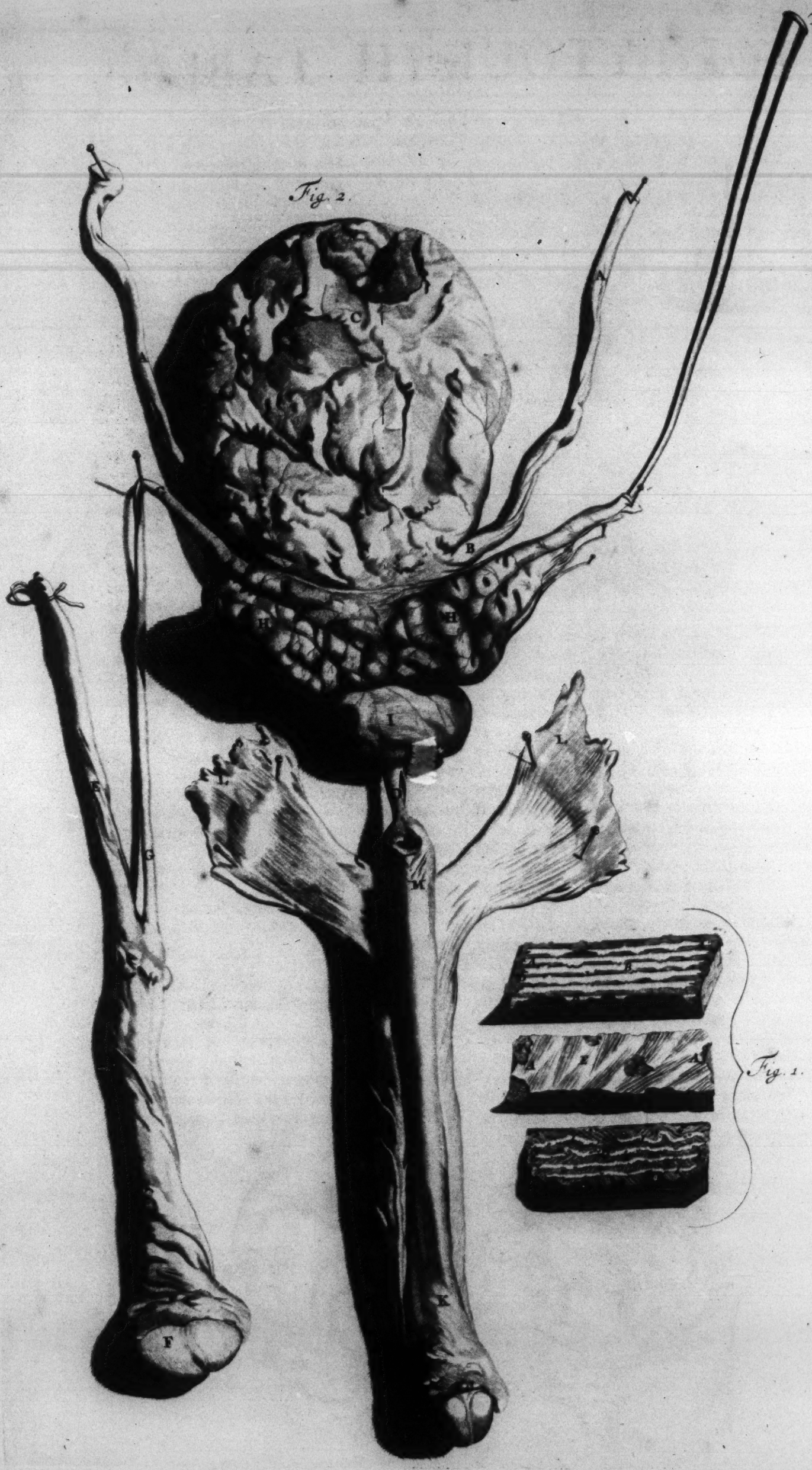

Fig. 1.

THE

FORTY-FOURTH TABLE.

Fig. 1.

THE Membranes of the *Ureter* View'd with a Microſcope.

A A A, *&c.* A Portion of the *Ureter* cut off near the Bladder and Expanded;

B, Its Exterior Membrane.

C D, Its Membranaceous Fibres running according to its Length, fill'd with Fat.

E, The Second Membrane or *Lamella* of the *Ureters*, conſiſting of Oblique Muſcular Fibres Interſecting each other.

F, The Blood-Veſſels lying between this and the Firſt Membrane.

H, The Third or Internal Membrane of the *Ureter*, compos'd of Fibres much Looſer and ſtanding at greater Diſtances, than thoſe of the Former.

I I, Divers Glandules which Appear in this Membrane, and Emit a *Mucus* to Defend the *Ureter* from the Acrimonious Salts of the Urine.

Fig. 2.

The Inferior or Back-part of the Bladder of Urine, *&c.* together with the *Penis*.

A B, *&c.* Portions of the *Ureters* in their Tortuous Progreſs to their Oblique Inſertions, between the Exterior and Inferior Membranes of the Bladder.

C C, The Bladder of Urine cover'd with Fat, as it is commonly found in Humane Bodies.

The Bladder of Urine may be ſaid to be a Dilatation of the *Ureters*; the intimate Structure of the Membrane of both agree, except that the Muſcular Fibres of the Bladder are Stronger and Larger than thoſe of the *Ureters*; the Superior and Largeſt of them embracing the Bladder, like a Hand, as *Spigelius* compares them; the Internal are Læſs, and Decuſſate the Superior with Various Angles: Some Anatomiſts reckon theſe among the Muſcles, and call them *Detruſores Urinæ*. The Glands of the Bladder of Urine are alſo Larger than thoſe of the *Ureters*, and are frequently Tumified as well as the Fibres in Diſeas'd Bodies, eſpecially in thoſe who for ſome time have been Afflicted with a Stone in this Part, the Sides of the Bladder have been very much Thickned; and by Compreſſing them a *Mucus* may be ſeen to Ariſe from its Internal Surface, thro' divers *Oſtiola* or Excretory Ducts. The Bladder is Situated in the *Hypogaſtrium* in the Duplicature of the *Peritonæum*: When it's Inflated in the Body, it exactly fill's that Cavity of the *Abdomen*, call'd the *Pelvis*; its Upper Part is Suſpended by the *Urachus*, which in ſome Animals would be liable to fall on its Neck and hinder the Evacuation of Urine.

The Uſe of the Bladder is to Receive the Urine from the *Ureters*, and Contain it till the Time of Excretion; whence it's Squees'd out partly by its own Carnous Fibres, but chiefly by the Muſcles of the *Abdomen*.

D, That Part of the *Urethra* that is Bended under the *Os Pubis* in its Proper Situation, and is plac'd between the Sphincter Muſcle of the *Anus* and *Proſtatæ*. This Part of the *Urethra* is liable to be Wounded, and ſometimes Perforated by too haſtily Introducing the *Conductor* into the Bladder, after an Inciſion is made in the *Perinæum* in Cutting for the Stone; whereby the Operator afterwards thruſts his *Forceps* between the Bladder of Urine and *Rectum*. This Inadvertency I am perſwaded is very often Practis'd among the Pretenders to *Lythotomy*, and frequently proves fatal to the Patient. One would think it was hardly poſſible a Man in his Senſes, and but tollerably acquainted with Anatomy, could commit ſuch Errors; yet of this I have met with more than one Inſtance, when being call'd to Diſſect the Deceaſed, in whom ſuch Operators have been ſo Unfortunate as to leave the Stone ſtill in the Bladder.

E, The *Vaſa Preparantia* or Blood-Veſſels of the *Teſtes*, involv'd in the *Peritonæum*.

F, The Teſticle. Between F and E G, is that Part of the Spermatick Veſſels, call'd *Corpus Pyramidale*, and *Plexus Pampiniformis* or *Varicoſus*.

G G, The *Vas Deferens* Aſcending from the Teſticle to the *Veſiculæ Seminales*.

H H, The *Veſiculæ Seminales* Blow'd up by the *Vaſa Deferentia*; that of the Right Side having a Blow-Pipe ſtill remaining in it.

I, The Back-Part of the *Proſtatæ* or *Corpus Glandoſum*.

K K, The Back-Part of the *Penis*.

L L, The *Muſculi Directores Penis*, whoſe Origin, Progreſs, and Termination are Expreſt *Tab.* 47. *Fig.* 5.

M, The Bulb of the Cavernous Body of the *Urethra* Deveſted of the *Muſculus Accelerator Urinæ*, Expreſt in the laſt mention'd Table; that Part of the Bulb towards the *Anus* being cut off; its Internal Cavernous Part here Appears Depreſt, or drawn Inwards.

THE FORTY-FIFTH TABLE.

Fig. 1.

IS the *Teſtes* with its Veſſels and Membranes when free'd from the *Scrotum*.

A, The Body of the Teſticle.

B, Some Appearances of the *Muſculus Cremaſter* (according to *Bidloo.*)

CC, The *Tunica Vaginalis;*

D, Its Inferior Part cleaving to the Teſticle;

E, Its Superior Part continued to the *Peritonæum.*

F, The Serpentine Diſtribution of the Blood-Veſſels on the *Teſtes.*

G, That Part of the *Teſtes* next the *Epididymis.*

h, The *Epididymis.*

H, The *Vas Deferens* whole Thicknels and Cavity is very truly Expreſt at its Extremity.

I, A particular Vaginal-Tunicle of the *Vas Deferens,* which *Bidloo* ſays has Circular Fibres, but not here Expreſt.

K, The Blood-Veſſels of the Teſticle call'd *Vaſa Præparantia,* as they Appear before any Injection or Inflation is made into them.

L, The Nerve of the Teſticle.

Fig. 2.

The *Teſtes, Vas Deferens,* and *Vaſa Præparantia* Diſplay'd, together with ſome Lympheducts of the Former.

A, The *Arteria Spermatica* continued from a Portion of the Deſcending Trunk of the *Arteria Magna*: I can't but ſuſpect this Part of the Figure to be Erroneous, ſince in the many Subjects I have always obſerv'd the Origin of the Spermatick Artery to be very Small, even much Smaller than its Inferior Trunk; inſomuch, that its Cavity Ariſing from the *Arteria Magna,* would ſcarce admit the Smalleſt Probe commonly us'd, it being but juſt Capacious enough to receive a Large Hogs Briſtle.

aa, *&c.* The Ramifications of the Spermatick Artery in their Deſcent to the *Teſtes.*

B, The Trunk of the Spermatick Vein with a Portion ot the *Vena Cava,* into which it Enters;

CDbb, *&c.* Its Various *Anaſtomoſes* and *Retiforme* Inoſculations, as it Aſcends from the *Teſtes.*

EE, The Valves of the Spermatick Vein which look from below Upwards, and prevent the Deſcent of the Blood in that Veſſel. Should it be askt why the Spermatick Veins in Humane Bodies, and the Arteries in Quadrupedes ſhould have a Tortuous Progreſs towards the Teſticles; and *Vice Verſa* the Humane Spermatick Arteries and Veins of Quadrupedes ſhould paſs Straight? We anſwer, Tho' the Separation of the *Semen* in the Teſticle is after the Manner of that of other Liquors in Conglomerate Glands, yet we conſtantly find in all Animals, that the Arteries of the *Teſtes* are Propagated from their Large Trunks at a conſiderable Diſtance from them; and thoſe of the Conglomerate Glands, are always ſupply'd with Blood-Veſſels from the next Neighbouring-Branch: And this Practice in Nature we can't at preſent Account for otherwiſe, than that the Blood in the Teſticles ſhould not paſs with that Velocity as it do's in other Glands; elſe what ſhould be the Deſign of thoſe many Turnings and Windings made in the Spermatick Arteries of moſt, if not all Quadrupedes? But that every Angle of their Contortions ſhould take off the *Impetus* of the Impell'd Blood from the Heart. But the Subject of our preſent Animadverſions here, offers an Objection. Why than are the Spermatick Arteries in Humane Bodies Straight, when their Progreſs is towards a Perpendicular Deſcent, upon the Account of the Erect Poſition of the Body? We anſwer, That the Deſcending Progreſs of the Blood might be a very good Argument of its Enjoying a freer Acceſſion to the *Teſtes*; but we conſtantly Obſerve in all Humane Bodies, that the Spermatick Arteries are (as we have Intimated above) very Small at their Originals from the *Arteria Magna,* which is a ſufficient Impediment to any great *Impetus* of the Blood from the Great Artery: Nor was this Contrivance in Nature neceſſary in Quadrupedes, becauſe it would be an Impediment in them in providing that Requiſite Stock of *Semen* to Impregnate the Female with her Numbers; or in regard a greater Proportion of *Semen* was in them neceſſary on the Account of the Length of the *Cornua Uteri,* which it muſt firſt paſs thro', before it can Arrive at the *Fallopian Tubes* and *Ovaria*: Whence it is, that the *Teſtes* of Quadrupedes are much Larger in Proportion, than the Humane. But why the Humane Spermatick Veins are thus Divided and Inoſculated with each other, when thoſe of Quadrupedes are Straight and fewer Trunks, is Accountable from their Poſitions; thoſe of Men being towards a Perpendicular Aſcent to convey the refluent Blood; and thoſe of Quadrupedes near Horizontal. From hence the Neceſſity of making one of theſe Blood-Veſſels Varicous, do's Appear, eſpecially the Humane Spermatick Veins; which, if had the Arteries been alſo, as in Quadrupedes; the Spaces or Perforations in the Muſcles of the *Abdomen* for their Egreſs, muſt have been ſo Large, as that the Inteſtines would have been continually liable to an Extruſion.

F, Part of the *Epididymis.*

G, The Glandulous Part of the Teſticle Deveſted of its Proper Membrane.

HH, The *Vas Deferens* partly free'd from the *Epididymis,* to Exhibit ſome of its Contortions.

I, The *Tunica Vaginalis* of the *Vas Deferens.*

K, The *Tunica Albuginea,* with ſome of the Glandulous Part of the Teſticle Rais'd with it.

L, Part of the *Tunica Elythroides* or *Vaginalis.*

M, Some of the Lympheducts of the Teſticle Pinn'd out.

Fig. 3.

Part of the *Vas Deferens* that Compoſes the *Epididymis,* done much bigger than the Life.

AA, Part of the Teſticle.

BD, The Tortuous or Serpentine Diſpoſition of the *Vas Deferens* in the *Epididymis*; in which Manner the whole Body of the *Epididymis* is Compos'd of that Veſſel, or Secretory Duct of the Teſticle.

CD, Another Separation of the *Vas Deferens* in the *Epididymis.*

E, The *Vas Deferens.*

II, The *Tunica Vaginalis* of the *Vas Deferens* Compos'd of Circular Fibres according to *Bidloo.*

THE

Fig. 2.

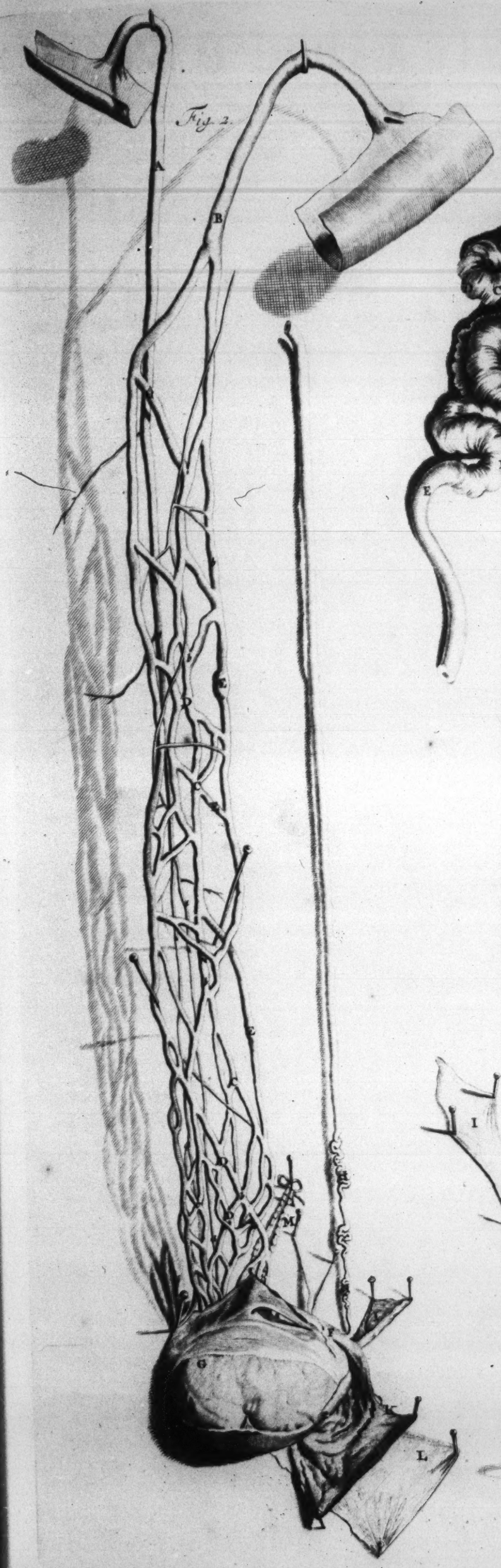

Fig. 3.

Fig. 1.

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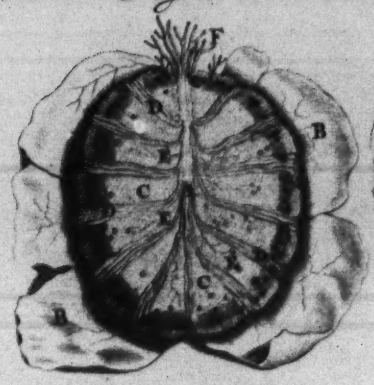

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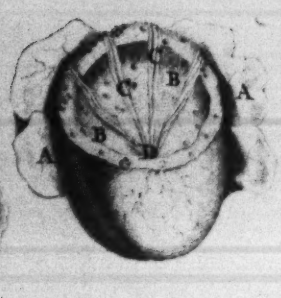

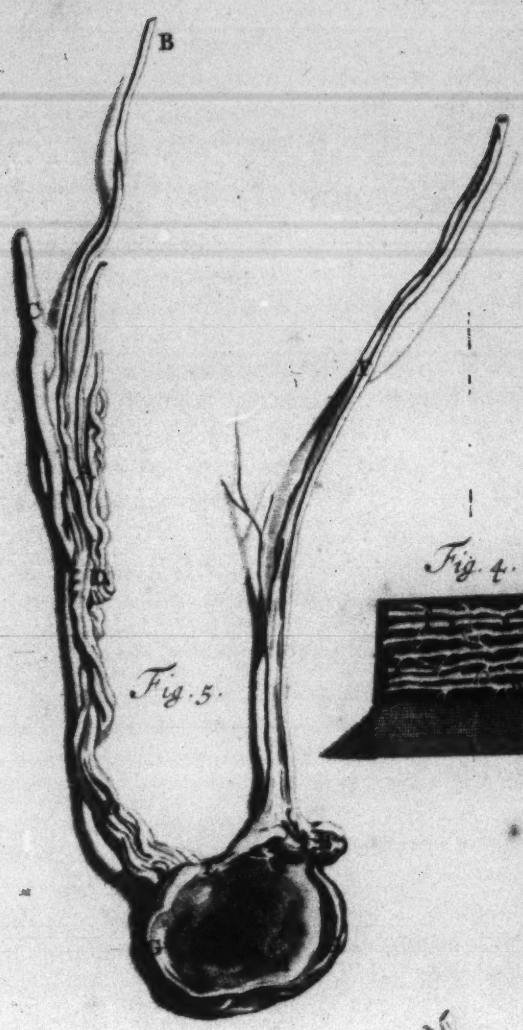

Fig. 5.

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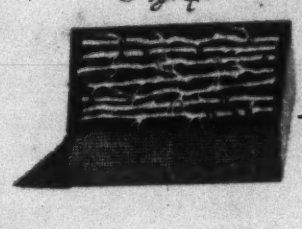

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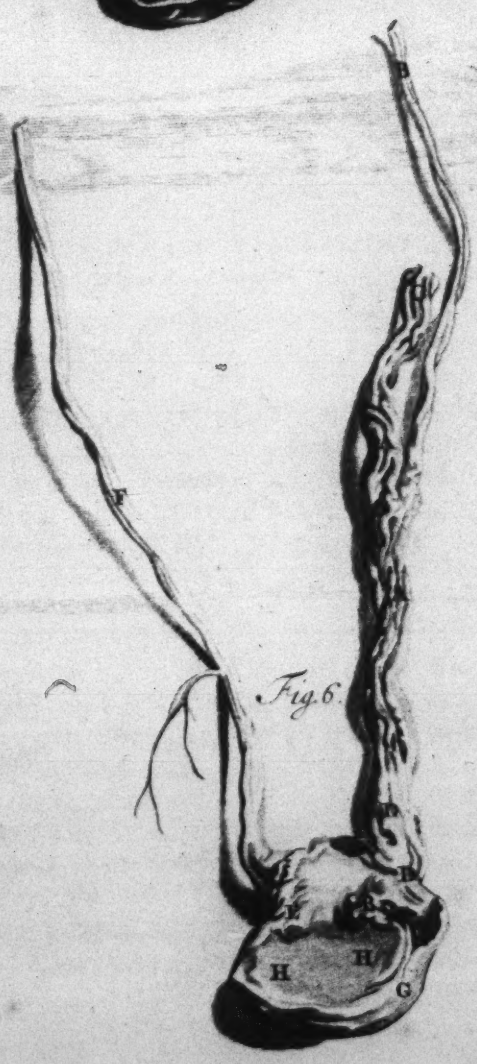

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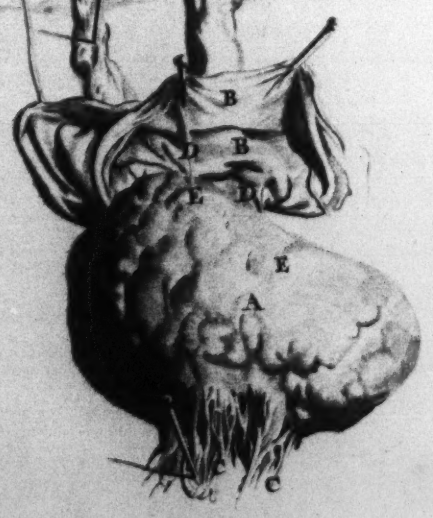


THE FORTY-SIXTH TABLE.

Fig. 1.

A, THE Glandulous Part of the Teſticle Deveſted of its Proper Integument.

BB, The *Tunica Albuginea*, or Proper Membrane of the *Teſtes* Rais'd and Pinn'd up.

CC, The Veſſels of the *Teſtes* broken off in Raiſing the *Albuginea*.

DE, *&c.* Some of the Blood-Veſſels which Perforate the *Tunica Albuginea*.

F, Part of the Foldings of the *Vas Deferens*, which Compoſes the *Epididymis*, made bare.

G, The *Vas Deferens*;

H, Its Cavity or *Ductus* which is very Conſpicuous in all the Figures of the preceding Table, and not Letter'd.

ID, The *Vaſa Præparantia* or Blood-Veſſels of the *Teſtes* involv'd in their Proper Membrane.

K, The Nerve of the *Teſtes*.

Fig. 2.

The *Teſtes* Deveſted of its *Tunica Albuginea*.

A, The Seminal-Veſſels of the *Teſtes* Collectively paſſing to their Egreſs, in Order to Compoſe the *Epididymis*.

BB, The *Tunica Albuginea* free'd from the *Teſtes*.

CC, The Glandulous Part of the Teſticle.

DD, The Seminal-Veſſels or Tubes deriv'd from their Originals, in the Sides of the Arteries that Compoſe the Glands.

EE, The Orifices made by breaking off of the Blood-Veſſels as they paſs thro' the *Tunica Albuginea*.

F, The Seminal Tubes paſſing out of the *Teſtes*, which are afterwards United into one Trunk, whoſe Foldings, Turnings or Windings Compoſe the *Epididymis*; whence it's continued (as is Expreſt in the preceding Figure) and call'd *Vas Deferens*.

Fig. 3.

The *Teſtes* Diſſected Tranſverſely.

AA, The *Tunica Albuginea* Rais'd.

BB, The Glandulous Part of the *Teſtes* where ſome *Veſtigia* of the Blood-Veſſels Appear.

CC, The Progreſs of the Seminal Tubes thro' the Subſtance of the *Teſtes*.

D, Their Trunks Collectively paſſing towards their Egreſs, as in the Former Figure, which by ſome is call'd *Ductus Highmorianus*.

Fig. 4.

The Veſſels of the *Teſtes* Expreſt with a Microſcope according to *Bidloo*, whoſe Deſcription take as follows. A, The Seminal-Veſſels ſeparated from each other. B, Their Cavities Swelling in the Manner of Valves. C, The Blood-Veſſels Accompanying the aforeſaid Veſſels, and Covering them with Glands. DE, The Fragments of the Small Membranes. I am apt to believe this Figure of the Seminal-Veſſels of the *Teſtes* is Fictitious, or that it may be of the Seminal-Veſſels of the *Epididymis*; for I am well aſſur'd the Seminal-Veſſels of the *Teſtes* and their Blood-Veſſels, can with no Art be ſo Diſplay'd as *Bidloo* Deſcribes theſe to be ſo Repreſented with a Microſcope: But grant it was Practicable ſo to Diſplay thoſe Veſſels, yet I am ſure it is not poſſible to diſtinguiſh the Veſſels which carry the *Semen* from thoſe of the Blood; ſo that ſuch a Deſcription muſt be Precarious. The Experiments I have made in Examining the *Teſtes*, convince me that the Extremities of their Blood-Veſſels which Compoſe their Glands, are much Leſs or more Tender than thoſe of other Parts; whence it is, if you Inject Mercury by the Spermatick Artery, it will not paſs back again by the Vein, as in the Kidneys and other Glands; but the Mercury upon puſhing it Forwards, will ſooner break the Extremities of theſe Veſſels, and get out into the *Tunica Albuginea*, and Extend the whole Stone than return again by the Spermatick Vein: Nor could I ever find the Lympheducts fill'd with Mercury, upon Injecting it into the Spermatick Artery; but by Blowing into the Vein of that Name, the Lympheducts ſoon become Diſtended, as *Nuck* has alſo taken Notice in his *Adenographia Curioſa*, Pag. 53.

Fig. 5.

A, The Blood-Veſſels of the Teſticle Injected with Wax, and not Separated from their Inward Membrane, deriv'd from the *Peritonæum*.

B, The Spermatick Artery.

C, The Vein.

DD, The Spermatick Blood-Veſſels above the *Teſtes* which are Diſtributed to the *Epididymis*. E, *Vaſa Deferentia*; F, *Tunica Albuginea*; G, and to the Stone it ſelf H. The Sixth Figure ſhews the other Side of the ſame Teſticle and Veſſels, which are Diſtinguiſh'd by the ſame Letters.

From what has been ſaid, it Appears the *Vaſa Deferentia* like the Secretory Ducts of other Glands, Spring from the Extremities of the Blood-Veſſels of the *Teſtes*; and agreeable to the Length and Tortuous Progreſs of the Blood-Veſſels of theſe Parts, ſo their Secretory Ducts or *Vaſa Deferentia* are of a vaſt Length alſo, and Diſpos'd in divers Foldings in Compoſing that Part call'd the *Epididymis*. The *Vaſa Deferentia* thus Ariſing from the *Epididymis*, paſs up Straight with the *Preparantia*: Soon after they are in the Cavity of the *Abdomen*, theſe Deferent Veſſels leave the *Preparantia*, and Deſcend over the *Ureters* in the *Pelvis* of the *Abdomen*, between the Bladder of Urine and the *Rectum*; where they begin to Dilate themſelves and Open into the *Veſiculæ Seminales*, as Appears in the following Table, *Fig.* 1, 2.

THE FORTY-SEVENTH TABLE.

Fig. 1.

SHEWS the Fore-parts of the *Penis*, *Glandulæ Proſtatæ*, and *Veſiculæ Seminales*, &c.

A A, The *Veſiculæ Seminales.*

a a, The Blood-Veſſels; B B, their Branches on the *Veſiculæ.*

C, The Membrane which covers the *Veſiculæ Seminales* and *Vaſa Deferentia.*

D *Superior*, The *Vas Deferens* of the Left Side appearing very much enlarg'd before it enters the *Veſiculæ Seminales* of that Side.

D D *Inferior*, The *Veſiculæ Seminales* of the Right Side.

E, The Neck of the Bladder cut off at the Beginning of the *Urethra.*

F F, The Fore-Part of the *Proſtatæ* divided to ſhew the Inſide of the *Urethra.*

G, The *Caruncula* or *Caput Gallinaginis* on the Inferior or Back-part of the *Urethra*; as it appears when the Superior or Fore-part of the *Urethra* is divided.

H H, The Two Orifices of the Seed-Veſſels, as they appear when the Upper Part of the *Caruncula* or *Caput Gallinaginis* is ſnipt off with a Pair of Sizars. The *Oſtia Proſtatarum* on both Sides the *Caruncula* do ſomewhat appear.

I I, The Upper Part of the *Penis*, call'd *Dorſum Penis*, cover'd with its *Membrana Carnoſa*, whoſe Fore-part with the True-skin, compoſes the *Præputium.*

K K, The *Corpora Cavernoſa Penis* cut from the *Oſſa Pubis.*

L, The Bulb of the Cavernous Body of the *Urethra.*

The Figure of the Cavernous Body of the *Urethra* differs very much from thoſe of the *Penis*; That of the *Urethra* being leſs in its Middle, and Large at both Ends; whereas the *Corpora Cavernoſa Penis* are Leſs at their Extremities, and Large in their Middles.

M, The *Glans* compoſing the other Extream of the Cavernous Body of the *Urethra.*

N N, The Nerves of the *Penis* pinn'd out.

O O, The Arteries of the *Penis.*

P, The *Vena Ipſius Penis* where it is Compreſt by the Tranſverſe Ligament of the *Os Pubis*, when the *Penis* is Erected.

Q, Part of the *Membrana Carnoſa Penis* pinn'd out.

Fig. 2.

The *Veſiculæ Seminales* cut through after Inflation and drying them, to ſhew their Inſides.

A B C, The Cells of the *Veſiculæ Seminales* ſo extended by Inflation, that the *Rete* or *Veſiculæ Minores* in their Inſides do not appear.

D F F, The Inſides of the *Vaſa Deferentia* in like Manner ſo Extended by Inflation, that their *Veſiculæ Minores* do not appear.

G, The Two Seminal Ducts which diſcharge the *Semen* into the *Urethra.*

H, Part of the *Proſtatæ.*

Fig. 3.

A, A. The *Corpus Glanduloſum* or *Proſtatæ* divided.

B, C, *&c.* Its Glandulous Inſide.

D D, The Ducts of the *Proſtatæ* which open into the *Urethra*, at the Sides of the *Caput Gallinaginis*, which are elegantly Expreſt in the following Table, *Fig.* 1. K.

F, F. Part of the *Urethra.*

Fig. 4.

The *Proſtatæ* blow'd up, their Excretory *Tubes* in the *Urethra* and dry'd.

A, A, The Exterior Membrane.

B, B, The Interior Membrane compos'd of more carneous Fibres than the former.

C, C, *&c.* Their Tranſparent Veſicules extended.

D, D, Some of the Veſicules broke up.

E, E, Other *Veſiculæ* that remain Hard and Extended.

F, F, Some Parts of the Ducts remaining Extended.

G, G, The Fragments of the Membranes.

Fig. 5.

The Muſcles of the *Anus* and *Penis in Situ.*

A, B, C, D, The *Muſculus Sphincter Ani*: The Figure and Situation of this Muſcle is here well Expreſt; tho Part of it be frequently divided in Opening a Fiſtulous *Sinus* of the *Anus*, yet the remaining Part of it is ſufficient for its proper Office of retaining the *Fæces.*

E, E, The *Levatores Ani*: The Origination of which Muſcles are beſt ſeen after dividing the *Oſſa Pubis*, to take out the Bladder of Urine with the *Penis*: They ſpring from the Internal Parts of the laſt mention'd Bones, and deſcend cloſe over the *Corpus Glanduloſum* or *Proſtatæ.* The Hinder Parts of theſe Muſcles derive their Broad, Thin, Fleſhy Beginnings from the *Oſſa Iſchii* and *Os Sacrum*; from theſe Places their Fibres deſcend to their Implantation, into the Lower End of the *Inteſtinum Rectum* in the *Anus.*

Theſe Muſcles have a Two-fold Office; firſt in drawing up the *Anus*, leaſt it ſhould be too much preſs'd upon by the *Fæces*; ſecondly they Compreſs the *Proſtatæ* and *Veſiculæ Seminales in Coitu*, in Order to diſcharge their Contents or *Semen* into the *Urethra.*

F, F, The *Directores Penis* or *Erectores*: They ariſe Fleſhy from the Lower Margin of the *Oſſa Pubis* where they are join'd to the *Iſchii*; whence they aſcend to their Implantations near the Beginnings of the *Corpora Cavernoſa Penis.*

The Poſition of theſe Muſcles renders them capable of pulling the *Penis* Inwards and Downwards; but by Means of a Ligament ariſing from the *Oſſa Pubis*, which is faſtned to the Upper Part of the *Penis*, they have a different Effect by drawing the *Penis* ſomewhat Upwards and Nearer the *Pubes*, whereby the great Vein on the *Dorſum Penis* is Compreſt, and the Erection of the *Penis* Promoted.

G, G, The *Corpora Cavernoſa Penis.*

H, H, The *Muſculus Accelerator Urinæ* covering the Bulb of the Cavernous Body of the *Urethra*: This derives its Origin from the Upper-part of the *Urethra* L, *Fig.* 1. on both Sides, and encompaſſing the Bulb, meets on its Inferior Part, but after a conſiderable Progreſs on that Part of the *Urethra* in the *Perinæum*; this Muſcle divides its ſelf and makes Two Tendinous Inſertions on both Sides the *Corpora Cavernoſa Penis*, as is Expreſt in this Figure.

Beſides the Offices commonly aſcrib'd to this Muſcle of compreſſing the *Urethra* in driving out the Remains of Urine, and promoting the Ejaculation of the *Semen*, both which Actions are chiefly done by the laſt deſcrib'd Parts of it, embracing the *Urethra.* It alſo Aſſiſts the *Muſculi Directores* in promoting the Erection of the *Penis*, by compreſſing the Bulb whoſe contain'd Blood is then driven towards the *Glans*, in a greater Quantity than can immediately be diſcharg'd by the Veins of the Bulb; the *Glans* thereby ſuddenly becomes diſtended: But the Vigorous Action of this Muſcle not continuing long, the Veins of the Bulb which were then compreſs'd, are again at Liberty to diſcharge the retain'd Blood, and the *Glans* ſuddenly Sinks: Whence it comes that the *Glans* is not always duly extended, when the *Corpora Cavernoſa Penis* are Erected.

This Part of the Bulb and *Accelerator* Muſcle, *&c.* are divided in *Lithotomy*, or Cutting for the Stone in the Bladder; Whence it happens that the Cicatrice of theſe Parts afterwards, often hinders a compleat Extention of the *Glans Penis* in an Erection. The like happn'd in a Patient I was not long ſince call'd to, who had a Fiſtulous *Sinus* in the *Perinæum*, in whom I found this Bulbous Part of the Cavernous Body of the *Urethra* very much Indurated: Upon Enquiry he told me, *When his* Penis *was Erected, the* Glans *remained ſhrivell'd and no Ways Extended*: Nor could the *Corpus Cavernoſum Urethræ* be extended, and therefore he could by no Means Ejaculate the *Semen* at the Time of Erection; but the *Semen* often came with the Urine.

I, The *Muſculus Tranſverſalis Penis* on the Left Side, that of the Right not being Letter'd; It Ariſes from the Knob of the *Os Iſchium* immediately below the Origination of the *Muſculus Director*, and paſſes tranſverſly to the Superior Part of the Bulb of the Cavernous Body of the *Urethra.*

K, The *Glans* or *Balanus.*

L, The *Præputium.*

M, The *Frænum.*

N, The *Urethra* open'd

T. 47.

Fig. 2.

Fig. 1.

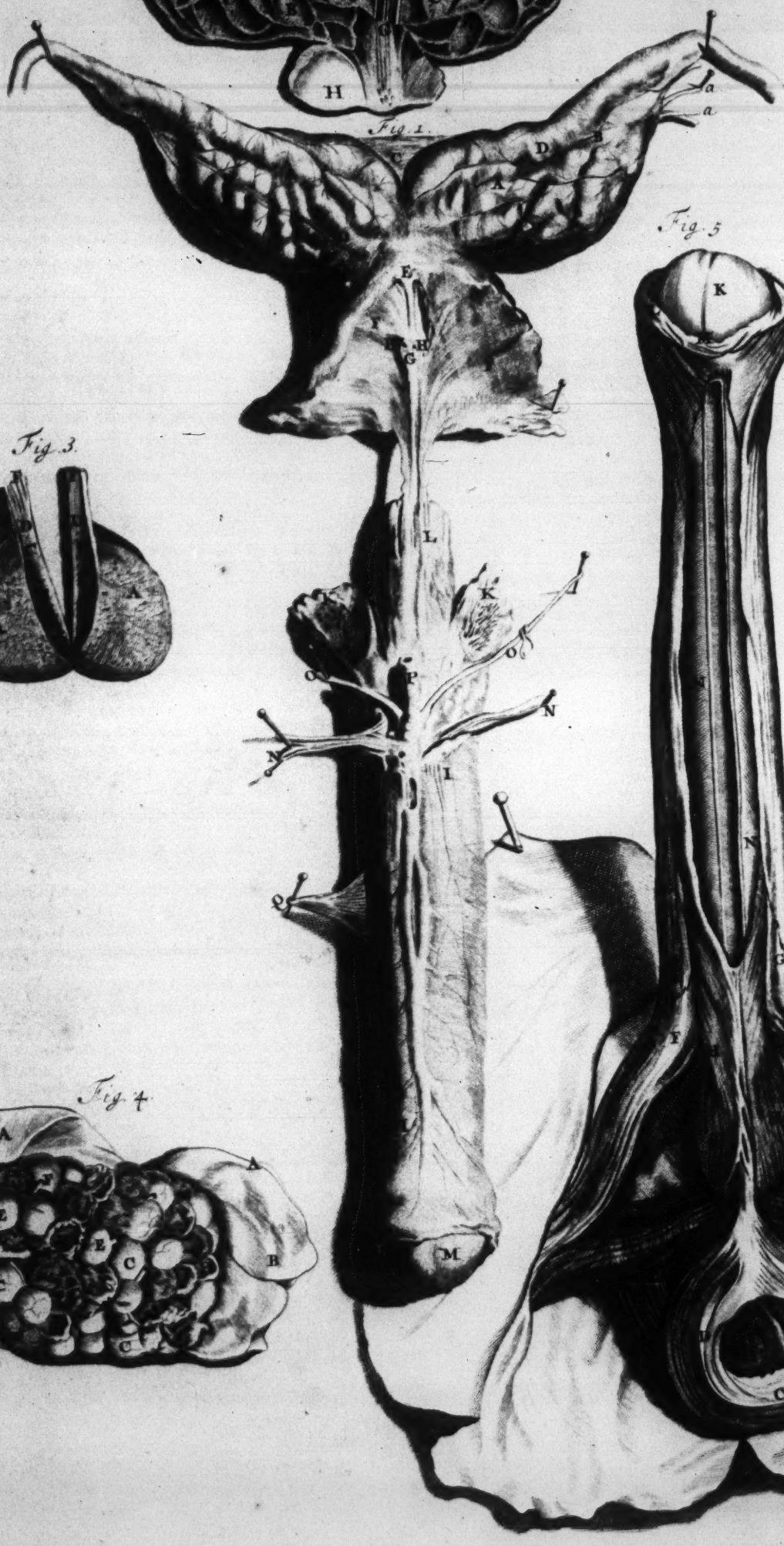


Fig. 5

Fig. 3.

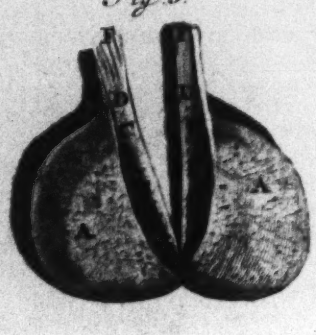


Fig. 4

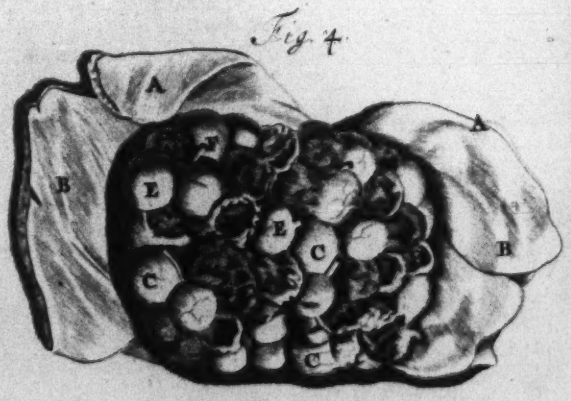


Fig. 1.

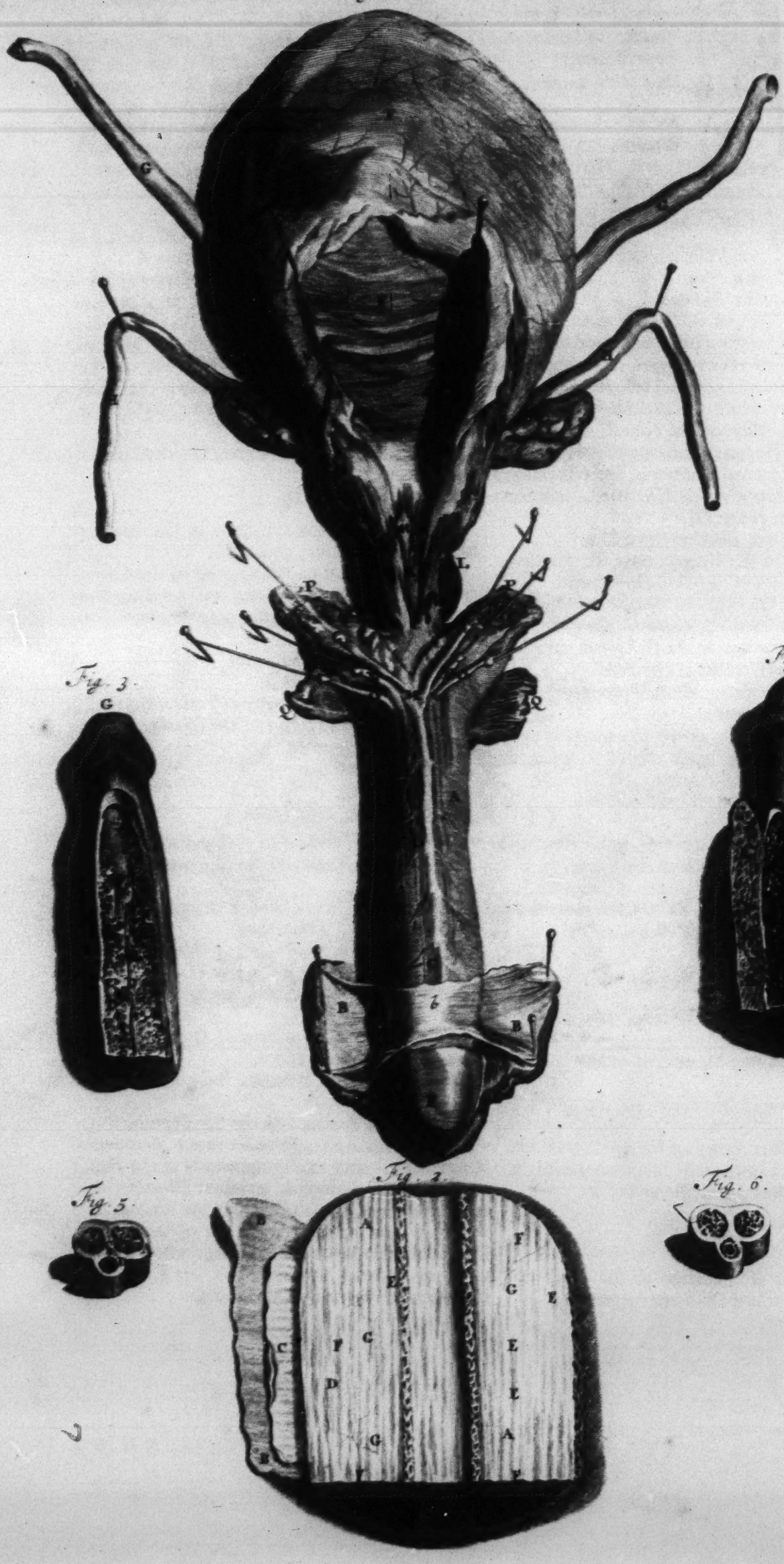


Fig. 3.

Fig. 4

Fig. 5.

Fig. 2.

Fig. 6.

THE

FORTY-EIGHTH TABLE.

Fig. 1.

THE Upper and Fore-parts of the *Penis* and Bladder of Urine, well Expreſt after a Curious Diſſection.

A A, The Cavernous Bodies of the *Penis* Whole.

B B, That Part of the Skin which Compoſes the *Præputium.*

b, The Reduplication or Inner Membrane of the *Præputium.*

C D, The Blood-Veſſels which Adorn the Upper-part or *Dorſum Penis.*

E, The *Glans* or *Balanus.*

About the Neck of the *Glans* where the Prepuce is join'd to the *Penis*, are plac'd the *Glandulæ Odoriferæ*, taken Notice of by the Accurate Anatomiſt Dr. *Tyſon.* Theſe ſeparate a Matter, which ſerves to Lubricate the Prepuce, and make it ſlide eaſily on the *Glans.* Theſe Glandules of the Prepuce are frequently very much Tumified in Venereal Contacts, and eſpecially if theſe Parts happen to be Ulcerated, whence a Fœtide Matter proceeds.

F F, The Urine Bladder Open'd.

G G, Parts of the Ureters next the Bladder.

H H, Portions of the *Vaſa Deferentia.*

I I, Parts of the *Veſiculæ Seminales* in View.

K, The *Caruncula* or *Caput Gallinaginis*, and *Oſtiolæ Proſtatarum* as they Appear after the Fore-part of the *Urethra* is Divided.

K L, The *Proſtatæ* whoſe Upper-part is Divided with the *Urethra.*

M, The Vein of the *Penis* which is Compreſt in an Erection, by a Ligament plac'd under the *Oſſa pubis.*

N N, The Two Arteries of the *Penis.*

O O, The Nerves.

P P, The *Corpora Cavernoſa* free'd from the *Oſſa Pubis* and their *Muſculi Erectores.*

Q Q, Parts of the *Muſculus Accelerator Urinæ* free'd from the Bulb of the Cavernous Body of the *Urethra*, and Expanded.

Fig. 2.

A A, Parts of the *Glans Penis* view'd with a Microſcope.

B B, The Common Membrane of the *Penis* or *Præputium.*

C C, The Proper Membrane of the *Glans* ſeparated.

D E F G, Divers Rows of Fibres diſpos'd like Membranes, and Intricately interwoven with the Internal Membranes and Blood-Veſſels.

Fig. 3.

The Fore-part of a Portion of the *Penis*, together with the *Glans* Dri'd after Inflation.

A A A, The Inner-parts of the *Corpora Cavernoſa Penis.*

B, The *Septum* of the *Corpora Cavernoſa.*

C D, The Cells of the Cavernous Bodies which Open into the Sides of the Veins, and are Suſtain'd by the Fibres which paſs to and fro' from the *Capſula* or Exterior Membrane of the *Corpora Cavernoſa* and *Septum.* Theſe Fibres are not ſo Conſpicuous in the Humane *Penis*, as in that of a Horſe: Nor are the Cells of a Humane *Penis* ſo Evident as they are in Quadrupedes: This Structure of the Cavernous Bodies of the *Penis* ſeeming to agree with the Spleen in the ſame Animal.

E E, The Arteries paſſing thro' the Middle of each Cavernous Body of the *Penis.*

After taking off the Tops of the *Corpora Cavernoſa Penis*, from a Patient who had the *Glans* very much Ulcerated, I could eaſily take hold of the Ends of the Bleeding Arteries with my Forceps, and paſs a Ligature on their Trunks, and Tie them; which Practice in ſuch Caſes is Preferable to the Application of Stypticks which cauſe Pain.

F, The *Glans.*

G, The Orifice of the *Meatus Urinarius* in the *Glans.*

Fig. 4.

The Hinder-part of the *Penis* in like Manner prepar'd by Inflation, *&c.*

A A, A Portion of the *Capſula* of the Cavernous Body of the *Penis* cut, and rais'd up; on which Part of the *Rete* of the *Corpus Cavernoſum* do's Appear.

B, The *Corpus Cavernoſum.*

C, The *Urethra* Open'd.

D, The *Corpus Cavernoſum Urethræ* Divided.

E, The remaining Part of the *Urethra* and its Cavernous Body entire.

F, The *Glans Penis.*

Fig. 5, 6.

The *Corpora Cavernoſa Penis* and that of the *Urethra*, after a Tranſverſe Section when Inflated and Dri'd.

A A, The *Capſula* or Strong Membrane of the Cavernous Bodies of the *Penis.*

B B, The *Corpora Cavernoſa Penis*; in the Middle of each of which the Trunks of Two Arteries paſs according to their Length.

C, The *Septum.*

D, The Strong Membrane or *Capſula* of the *Corpus Cavernoſum Urethræ.*

E, The Circular Cavernous Body of the *Urethra.*

A particular Account of the Structure of this Part is Inſerted in an *Appendix* to our *Myotomia Reformata*; where the Lympheducts of the Humane *Penis* are Deſcrib'd, and ſome *Phænomena* relating to them Explain'd: Since the Writing of which, I have had an Opportunity of ſeeing the Lympheducts on the *Penis* of a Dog, where I Obſerv'd by Blowing into the Veins, the Lympheducts were immediately Diſtended.

THE

FORTY-NINTH TABLE.

SHEWS the Cavity of the *Abdomen* of a Woman after the Inteſtines, Meſentery, *&c.* are remov'd.

A A, The Internal Part of the *Peritonæum*, together with the Common and Proper Integuments of the *Abdomen* after a Crucial Section.

B, The Right *Falloppian* Tube of the *Uterus* ſomewhat Rais'd from within the *Pelvis* of the *Abdomen*.

C, A Portion of the *Inteſtinum Rectum*.

D, The Bladder of Urine *in Situ*.

E, The *Pubes*.

F, The *Arteria Magna* with its Iliac Branches lying on thoſe of the *Vena Cava*.

G, The *Vena Cava*.

H, The Stomach ſupported with a *Stylus*.

I, The Liver *in Situ*.

K, Part of the Spleen.

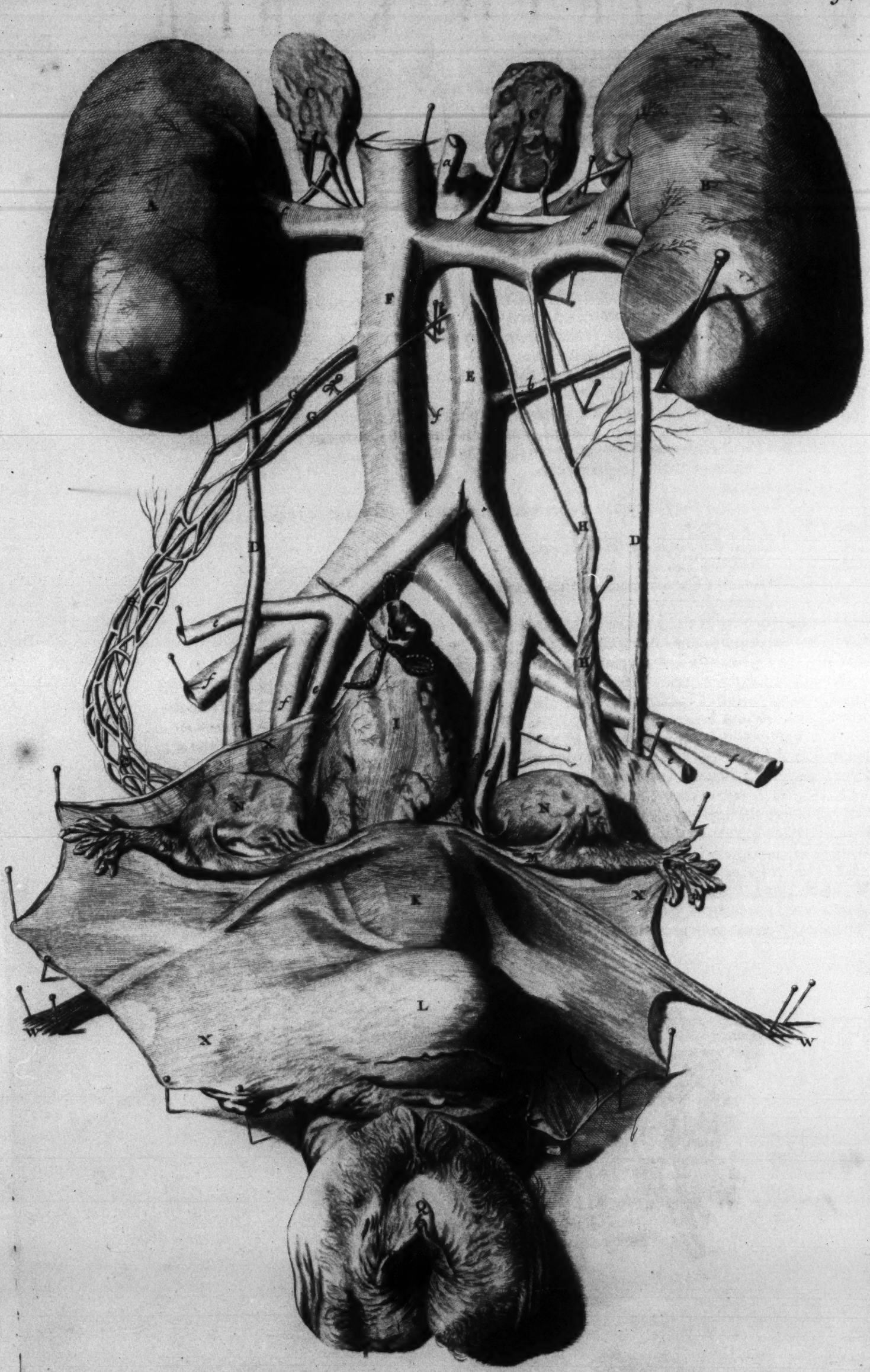
L, Part of the Left Kidney.

M M, Parts of the *Muſculus Pſoæ Magni*.

N, The *Ligamentum Venoſum Umbilicale* Turn'd up.


N
F
C
M
C
B
D
A
E

T. 50.



THE

FIFTIETH TABLE.

REPRESENTS the Parts of Generation in a Woman Curiouſly Diſſected, and plac'd in their Natural Site.

A, The Right Kidney.

B, The Left Kidney.

CC, The *Glandulæ Renales* with their Blood-Veſſels.

E, The *Arteria Magna.*

DD, The Ureters.

a, The Trunk of the *Arteria Meſenterica Superior* cut off.

b, The Trunk of the *Arteria Meſenterica Inferior.*

e e, *&c.* The reſt of the Branches of the Great Artery; of which the Superior are the Emulgents, the Inferior the *Iliaci Externi,* and *Interni.*

F, The Aſcending Trunk of the *Vena Cava.*

fff, The Various Ramifications of the *Vena Cava*; whereof the Superior are the *Emulgentes,* the Middle the *Vertebrales,* the Inferior the External and Internal Iliac Branches.

GG, The Spermatick Artery and Vein in their Progreſs to and from the *Ovaria* Blow'd up, and Separated from each other on the Right Side.

HH, The Spermatick Artery and Vein of the Left Side, ſtill remaining within their Coverings.

I, A Portion of the *Inteſtinum Rectum* Tied.

K, The *Fundus Uteri* lying under the Internal Membrane of the *Peritonæum.*

L, The Bladder of Urine, in like Manner, under the Internal *Lamina* of the *Peritonæum.*

MM, The *Tubæ Falloppianæ* Adorn'd with their Blood-Veſſels.

mm, The Cavities of the Falloppian Tubes.

NN, The *Ovaria.*

nn, The *Fimbriæ* of the Falloppian Tubes which Embrace the *Ovaria* after Impregnation, as Appears *Tab.* 53. B, C. *Fig.* 1.

O, The Orifice of the *Vagina* or *Pudendum.*

PP, The *Labii Pudendi.*

Q, The *Præputium Clitoridis* made by the *Nymphæ.*

RR, The *Nymphæ.*

T, The Upper-part of the *Pudendum* towards the *Mons Veneris.*

V, The Extremity of the *Clitoris* call'd *Glans,* cover'd with the *Nymphæ.*

WW, The *Ligamentia Teretia* continued to the *Fundus Uteri,* and Pinn'd out.

Tho' theſe Parts have obtain'd the Name of Ligaments, yet their Structure and Compoſition differ very much from the Ligaments of other Parts, which are Hard, Dry and very Compact Bodies; whereas theſe Round Ligaments of the *Uterus* are Compos'd of a great Number of Veins and Arteries; the Nerves and Lympheducts are alſo ſaid to Enter into their Compoſition: They Appear to be very Extenſible Parts, and are Coextended with the *Fundus Uteri* after Impregnation: They are Broad towards the *Fundus Uteri,* and gradually Leſſen themſelves and become Round as they Approach the *Pubis,* where they Terminate under the Fat: They paſs thro' the Muſcles of the *Abdomen,* not unlike the Spermatick Veſſels in Men, whence Women are ſometimes liable to have a *Hernia Inteſtinalis*; but the Perforations of the Muſcles not being ſo Large as in Men, thoſe Ruptures do not ſo often happen in Women.

XX, *&c.* A Large Portion of the Internal *Lamina* of the *Peritonæum* covering the Surface of the *Fundus Uteri,* Bladder of Urine, *Ovaria* and the like: This by ſome is Erroneouſly call'd the *Ligamentum Latum Uteri.* Nor is there any ſuch Ligament belonging to the *Uterus,* unleſs this Part of the *Peritonæum* may be ſo call'd.

THE
FIFTY-FIRST TABLE.

Fig. 1.

THE *Clitoris* and Parts annex'd, Diſſected.

A, The Upper Part of the *Clitoris* with its Veins, which are compreſt by the *Ligamentum Tranſverſum* of the *Os Pubis* in the Time of Coition, in like Manner as the Vein of the *Penis* is in its Erection,

B B, The Two *Crura Clitoridis*, which ariſe from the *Oſſa Pubis*, where they appear Porous.

C C, Parts of the *Labia Pudendi*.

D, The *Glans Clitoridis*.

G G, The *Nympphæ* which compoſe the *Præputium Clitoridis*.

H, The *Meatus Urinarius*, or Paſſage of Urine.

E E, The *Muſculi Erectores Clitoridis*, which ariſe from the External Margin of the *Os Iſchium*, and are Inſerted to the Beginnings of the *Corpora Cavernoſa* of the *Clitoris*: Their Office is to draw the *Clitoris* to the *Oſſa Pubis*, in Order to ſtop the Refluent Blood in its large Vein, whence the *Clitoris* like the *Penis* becomes Extended. By theſe Means the *Clitoris* is not only Dilated, but the *Labii Pudendi* are in like Manner Extended by Two Cavernous Bodies or *Retia* of Blood-Veſſels plac'd on each Side the Orifice of the *Vagina* externally. Theſe are accurately deſcrib'd by *Reg. de Graaf de Mulierum Organis, Cap. VII.* and call'd *Plexus Retiformis*.

F F, Parts of the *Muſculus Sphincter Vaginæ* left at the Extremity of the *Clitoris*. The Circular Fibres of this Muſcle Encompaſs the *Vagina* on the Retiform *Plexus*, and Compreſs its Veins, (which diſcharge their Blood into the Vein of the *Clitoris* A.) By which Means the *Plexus* is fill'd with Blood, and the External Orifice of the *Vagina* (about the *Caruncuiæ Myrtiformes*) is ſtraighten'd and adequately embraces the *Penis* in a Mutual *Coitus*.

Fig. 2.

Part of the *Clitoris* cut off after Inflation and Drying.

A, The little Head or *Glans Clitoridis*.

B, Its Proper Membrane or *Capſula*.

C, Its Cavernulous Contexture.

D, Its *Septum*.

Fig. 3.

The *Pudendum* and Fore-part of the *Vagina Uteri* Open'd.

A, Part of the *Vagina*, which lies under the Bladder of Urine.

B B, The *Vagina* and *Meatus Urinarius* divided.

C C, The *Corpus Glandulaſum* or Part Analogous to the *Proſtatæ* in Men, divided.

D D, The *Ductus Secretorii* or *Lacunæ* of *De Graaf*, within the Gland, which have divers *Oſtiola* about the *Meatus Urinarius*, whence Iſſues Part of the Matter emitted *in Coitu*.

Beſides theſe Ducts ariſing from Glands plac'd about the the *Meatus Urinarius*, there are others of the ſame Kind in the *Vagina*, and Two remarkable ones ariſing from Two very conſpicuous Glands, plac'd towards the Lower Part of the *Orificium Pudendi* by the *Anus*, whoſe Ducts open at the Roots of the *Caruncuiæ Myrtiformes* externally on each Side the *Pudendum*. Theſe and the above-mention'd Ducts diſcharge the Matter commonly call'd *Semen*.

E E E, The *Meatus Urinarius* open'd; at whoſe Extremity divers of the aforeſaid *Oſtiola* appear.

F F, The *Labia Pudendi* open'd.

G, The Internal Rugous Membrane of the *Vagina Uteri*: This Internal Membrane is much fuller of *Rugæ* towards its Upper Part, B, C, D, here divided, than in the Lower, G, next the *Rectum*: As it approaches the *Pudendum*, it becomes ſomewhat Narrower, and behind or above the Orifice of the *Meatus Urinarius* it frames a Valvulous Appearance in Virgins of above 16 or 17 Years of Age. In Girls of 7 or 8, it appears to be a Tranſverſe Membrane having a Small Perforation towards its Upper Part. When the *Hymen* is broke, whether *in Coitu* or otherwiſe, the divided Parts of it make the *Caruncuiæ Myrtiformes*, whence it is, the Figure and Number of thoſe Caruncles are uncertain; *Wierus*, *Parry*, *Hildanus* and others give us Hiſtories of Caſes where the *Hymen* has been Impervious after Twenty-Two Years of Age, and ſuch a Quantity of *Menſtrua* Pent in the *Vagina*, &c. extend the Lower Belly, as if they had gone with Child. Some Years ſince I was call'd by my Ingenious Friend Dr. *Chamberlin* to ſee a Marry'd Woman of above Twenty Years of Age, whoſe Lower Belly was very much Diſtended, as if with Child. Upon Examining the *Pudendum*, we found the *Hymen* altogether Impervious, and driven out beyond the *Labia Pudendi* in ſuch Manner, that at Firſt Sight it appear'd not unlike a *Prolapſus Uteri*. In the Upper Part towards the *Clitoris* we found the Orifice of the *Meatus Urinarius* very open, and its Sides Extruded not unlike the *Anus* or *Cloaca* of a Cock, and without any Difficulty I could put my Fore-finger into the Bladder of Urine. On dividing the *Hymen*, at leaſt a Gallon of Grumous Blood of divers Colours and Conſiſtencies came from her, which was the retain'd *Menſtrua*. The next Day no leſs a Quantity of the ſame Matter flow'd after removing the Peſſary which I had put in the Day before. After Three, or Four Days ſhe was eaſie, and ſoon after recover'd, and with in a Year was deliver'd of a healthful Child. Her Husband told us, Tho' lying with her at Firſt was very painful to himſelf as well as to her, yet at laſt he had a more eaſie Acceſs; which could be by no other Way than the *Meatus Urinarius*.

Fig. 4.

The *Uterus*, *Ovaria* and *Falloppian* Tubes Diſſected.

A, B B, The *Fundus Uteri* open'd to ſhew the Cavity and Thickneſs of its Sides.

C C, The *Collum Uteri* leading from the *Vagina* to the *Fundus*, likewiſe open'd.

D, The *Os Tincæ* or Orifice of the *Collum Minus*.

E, The *Vagina Uteri* divided to ſhew its *Rugæ*.

F F. The Cavity of the *Fundus Uteri* as it appears before Impregnation, it being of a ſomewhat Triangular Figure, and not exceeding the Magnitude it's here repreſented of. Between D and F is the *Collum Minus* or *Cervix Fundi Uteri*, where divers *Rugæ* are truly repreſented, in whoſe *Sulci* are the Orifices of divers ſmall Tubes, which ariſe from a Glandulous Contexture of the Veſſels of this Part; whence proceeds a Pituitous Serous Matter, as may be ſeen by Compreſſing this Part externally.

De Graaf de Mul. Organ. Generat. Inſeroi. Cap. VIII. acknowledges his Ignorance, to what End this Matter is here ſeparated, unleſs it be to moiſten the Parts and excite Venery, &c. In preparing a Humane *Uterus* after Three Months Impregnation, I found the *Os Tincæ* and *Collum Minus* very much dilated, and fill'd with a very Tough, Glutinous Matter. The like is taken Notice of by *Spigelius*, Lib. VIII. Cap. XXIII. As the Time of the *Partus* draws in, the *Os Tincæ* ſtill becomes Larger, and the Glutinous Matter encreaſes, whereby it prevents Abortions by oppoſing any Extruſion of the *Chorion*, notwithſtanding the Efforts made by the *Fetus* from within towards the Time of the *Partus*: This Glutinous Matter alſo hinders the Intruſion of any Thing from the *Vagina* after Impregnation. When this Matter is Vitiated as in a *Fluor Albus*, Impregnation is Hindered.

G H H, The Orifices of the *Falloppian* Tubes in the Two Superior Angles of the *Fundus Uteri*.

I I I I, Two Probes Inſerted into each of the laſt mention'd Tubes.

K, A ſmall Conſtricture in the Mouth of the Tube.

L L, The Right *Falloppian* Tube Open'd and Expanded, whoſe Internal Membrane is ſomewhat Rugous.

M N, The Right *Ovaria* entire.

O O O, The *Fimbriæ* or *Expanſum Foliacium Tubæ*.

P P, A Broad Ligament between the *Ovarium* and Tube, not unlike to a Bat's Wing.

Q. The Left *Ovaria* Open'd.

R R, The External Membrane of the *Ovarium*.

S S, T T, Divers Glands and Tranſparent little Veſſicules, which compoſe the *Ovaria*.

V V, The *Peritonæum* or External Tegument of the *Uterus*, which is call'd the *Ligamentum Latum*.

W W, Portions of the *Ligamenta rotunda Uterina*.

THE

Fig. 1.

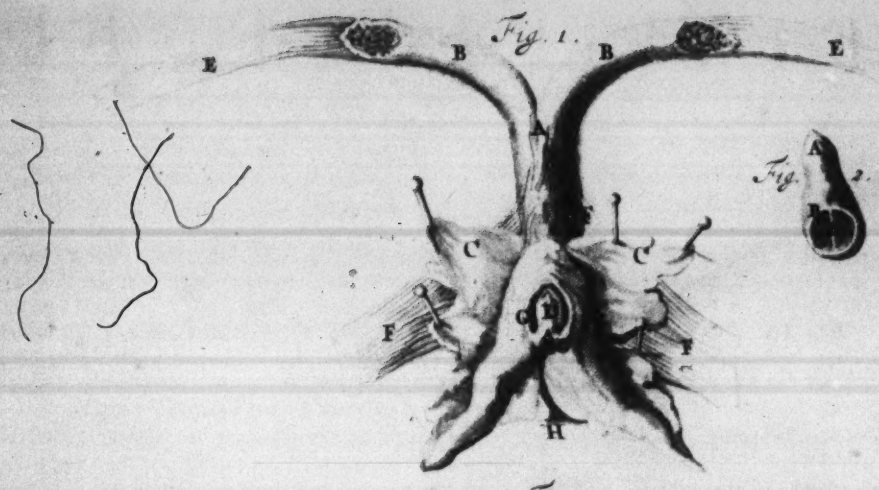


Fig. 2.

Fig. 3.

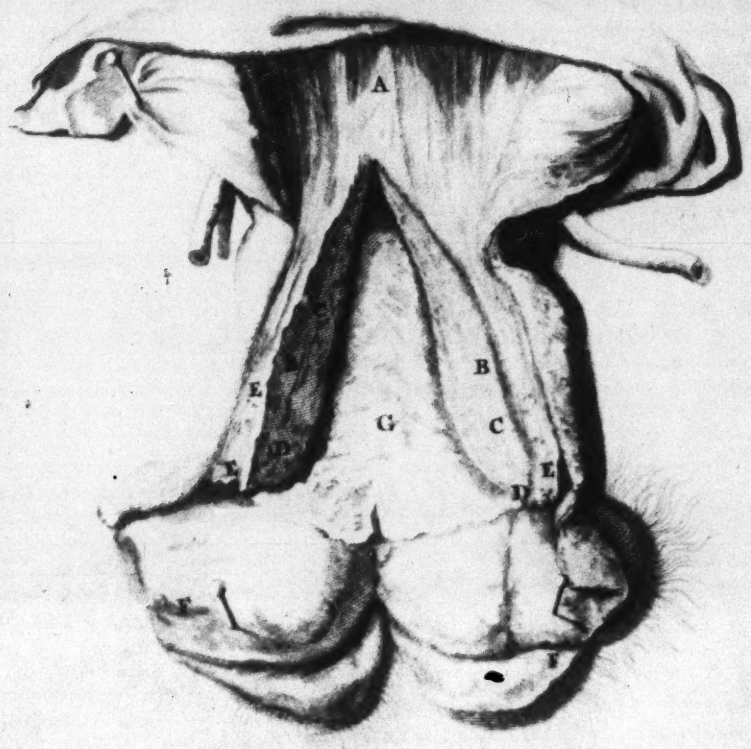
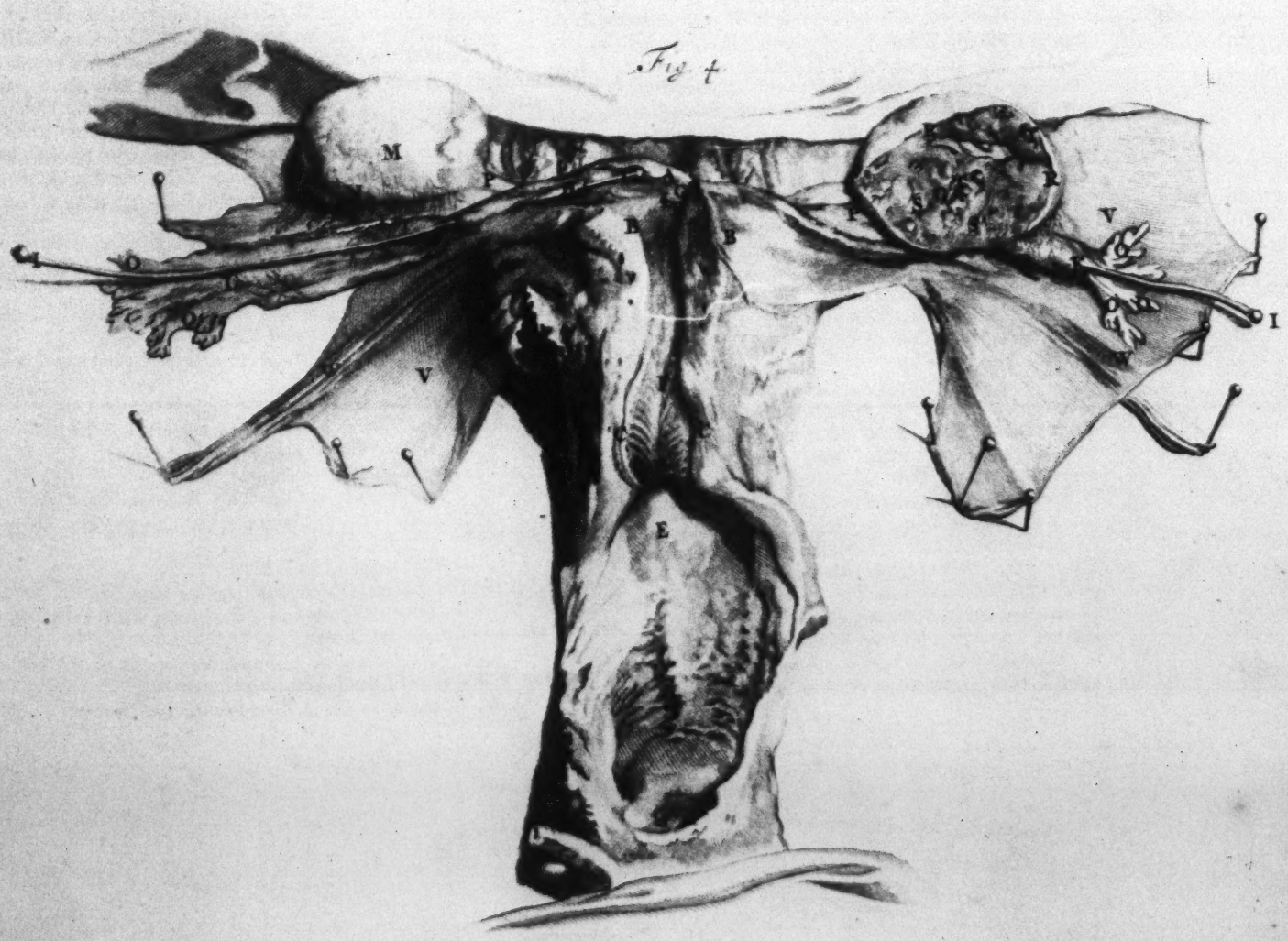


Fig. 4



THE

FIFTY-SECOND TABLE.

THE Cavity of the *Abdomen* after its *Viſcera* are remov'd.

A A, The Common and Proper Integuments of the *Abdomen*, Diſſected and turn'd Aſide.

B B, The *Diaphragma in Situ*: It Ariſes Tendinous on the Right Side from the Third, Second and Firſt *Vertebra* of the Loins, and laſt of the Back (H); On the Left, from the Firſt of the Loins, and Laſt *Vertebra* of the Back; hence Aſcending with Fleſhy Fibres on each Side running Straight, but towards the Middle they paſs ſomewhat Curvedly, Interſecting each other near the *Oeſophagus* (D), do as it were Embrace it: After which they become Tendinous and join with its Upper-part (F), which Ariſes Thin and Fleſhy from the *Os Pectoris* or *Sternum*: Its Lateral Parts derive their Origins from the Cartilaginous Endings of the Ribs and Lower Margin of the Laſt Rib (G) on each Side. From theſe Parts the Fleſhy Fibres of the Diaphragm (like Lines drawn from a Circumference towards a Center) paſs to its Middle Part, where its Tendinous Fibres are Intercuſſated with each other and Exhibit a *Rete*. Beſides its Perforation for the *Oeſophagus* in its Fleſhy Part, it has another in its Tendinous one, no leſs remarkable, to Tranſmit the *Vena Cava* (C). Its Double Origin at the *Vertebræ* of the Loins gives Way to the Deſcending Trunk of the *Arteria Magna* (E), and Two Aſcending of the *Ductus Chyliferus* and *Vena Azygos* on the Left Side. In Expiration this Lower Surface of the Diaphragm is Concave towards the *Abdomen* (as here Expreſt), and its Upper, Convex towards the *Thorax*. In Inſpiration it Approaches towards a Plane next the *Thorax* as well as the *Abdomen*. If the *Viſcera* of the Lower Belly are taken out in Viviſection, the Inferior Surface of the Diaphragm will Appear Convex in Inſpiration, and more eſpecially if Two ſmall Wounds ſhould be made into the Cavities on both Sides the *Thorax*, ſo that the Ambient Air may Ruſh into its Cavities on each Side the *Mediaſtinum*; the *Diaphragma* than will ſtill remain Concave towards the *Thorax*, and Convex towards the *Abdomen*. Nor can Reſpiration be perform'd, except the Wounds in the *Thorax* are Large enough to Diſcharge its contain'd Air freely again; whence it happens that Wounds in the *Thorax* may ſuddenly prove Mortal, when no contain'd Part is Injured. But in ſuch Caſes the External Wounds ought to be Enlarg'd that the Air may have a Free Egreſs, which the Perforation of the Skin and Muſcles not correſponding, Hinders; but this ſeldom happens, becauſe both Sides of the *Thorax* are not very liable to be Wounded in ſuch Manner at the ſame time. If one Side of the *Thorax* only is Wounded, the External Air ought by all means to be Pent out, tho' the Patient is not Incident to be Suffocated; becauſe the other Side of the Lungs are not Incommoded, yet the Intruded Air ought to be let out, tho' it only Hinders the Dilatation of one Side of the Lungs. In Diſſecting a Morbid Body which had one Side of the Diaphragm very much Depreſt, (by the contain'd Water on the ſame Side of the *Thorax*) I found the Lungs on that Side in great Part Mortified, and the Blood Stagnated; there being ſome Air alſo broke out from the *Bronchia* into the Cavity of the *Thorax*, which compleatly Hinder'd Inſpiration on that Side of the Lungs.

B, The Blood-Veſſels of the Diaphragm, call'd *Phrenicæ*.

C, The Perforation for the *Vena Cava*.

D, The *Gula* or *Oeſophagus* cut off before it paſſes the Diaphragm.

E, The Trunk of the *Arteria Magna* in like Manner divided.

F, The Fore-part of the Diaphragm towards the *Cartilago Enſiformis*.

G, The Back-part Contiguous to the laſt Rib.

H, The Tendinous Origin of the Diaphragm on the Right Side call'd *Appendix*. The Chief Action of the Diaphragm is to Compreſs the *Viſcera* of the Lower Belly, in Order to Enlarge the Cavity of the *Thorax* in Inſpiration: Nor can we ſee any reaſon to doubt its being a Muſcle elegantly Fram'd for this Action, wherein divers contingent Offices occur; as the great Work of Chylification is Aſſiſted by the frequent Compreſſes made by it, in its repeated Contractions; and that not only in Promoting the Deſcent of the Contents of the Stomach and Inteſtines; but alſo the Aſcent of the *Chyle* by the *Vaſa Lactea* and Blood by the *Vena Porta* are alſo Promoted. It alſo haſtens the Diſcharge of thoſe Liquors contain'd in the Excretory Ducts of thoſe many Large Glands within the Cavity of the *Abdomen*, as the Liver, Pancreas, Kidneys, *&c.* Not to mention many other contingent Offices of this Part; as in the Excluſion of the *Fæces* and Urine in both Sexes, and *Fœtus* in Women, *&c.*

I I, The *Vertebræ* of the Loins with their Cartilaginous *Interſtitia* join'd by Ligaments.

K K, The *Muſculus Pſoas Magnus* on the Right Side; the *Pſoas Parvus* in this Subject perhaps was wanting.

L L, The *Pſoas Magnus* on the Left Side ſomewhat free'd from the *Vertebræ*, and Pin'd out: This large Fleſhy Muſcle derives its Origin from all the *Vertebræ* of the Loins Internally, Laterally within the Cavity of the *Abdomen*, whence Deſcending over the Superior Part of the *Os Sacrum* and Spine of the *Ilium*, where it joins with the Fleſhy Fibres of the *Iliacus Internus* (N), and paſſes to its Implantation on the Superior Part of the Leſſer *Trochanter* of the Thigh-bone. This pulls the Thigh Upwards, and moves it Forewards in Walking, Running, *&c.*

M, The *Muſculus Quadratus Lumborum*, Deſcrib'd *Tab.* 30.

N N N, The *Iliaci Interni in Situ*: Either of theſe Muſcles Ariſes from above half the Superior Region and Internal Concave Part of the *Os Ilium*, and joining with the *Pſoas Magnus*, is Inſerted with it to the Leſſer *Trochanter*. The Office of this Muſcle, and the *Pſoas Magnus* are the ſame.

O, Part of the *Gracilis*.

P P, Parts of the *Triceps*.

THE

FIFTY-THIRD TABLE.

Fig. 1.

REPRESENTS the Fore-part of the *Fundus Uteri* not long after Impregnation, together with the Parts Annext.

A, The *Fundus Uteri.*

B, The Left *Falloppian* Tube Diſtended, and its Foliated Expanſions Embracing the *Ovarium*; which Action, according to *De Graaf* do's not Appear in Rabbets till Twenty-four Hours after the *Coitus.*

CC, The *Ovaria* with their Protuberant *Ova* in their *Folliculi.*

DD, The Blood-Veſſels more Extended with Blood than before Impregnation.

E, The Right *Falloppian* Tube with its *Fimbriæ* Expanded.

FF, Portions of the Blood-Veſſels of the *Ovaria* call'd *Præparantia* and *Spermatica.*

GG, A Portion of the *Peritonæum* which makes the External Membrane of the *Uterus,* and call'd *Ligamentum Latum Uteri.*

HH, The Uterine Round Ligaments lying under the *Peritonæum.*

I, The *Cervix Uteri* Diveſted of its Common Membrane the *Peritonæum,* to ſhew its Blood-Veſſels.

KK, The *Vagina Uteri* Inverted, where its Internal *Rugæ* are well Expreſt.

L, The Internal Mouth of the *Uterus,* call'd *Os Tincæ,* ſomewhat Dilated.

Fig. 2.

A, The Left Uterine Tube (Expreſt in the preceding Figure) pull'd from the *Ovaria* it Embrac'd with its *Fimbriæ*; which remain Extended, together with its whole *Ductus.*

B, The Fimbriated Orifice of the Tube Open.

C, Its Progreſs towards the *Fundus Uteri*: The whole Tube being of a deep Red Colour from its many Blood-Veſſels, eſpecially the Veins which Frame a Reticular Body, as may be Demonſtrated either by Injecting them with Mercury, or Inflation. Hence it Appears the Uterine Tubes (not unlike the *Corpora Cavernoſa Penis Clitoridis,* &c.) have their Reticulated Sides Extended, and their Internal Cavities of Conſequence Enlarg'd upon a particular Stop of the Refluent Blood; but whether this Stop or Retardation of the Blood in the Veins, made in the time of the *Coitus,* (which for ſome Reaſons we are enclin'd to ſuppoſe) or as *De Graaf* intimates Five or Six and Twenty Hours after; neither our preſent Occaſions nor Opportunities will allow us to Examine.

Fig. 3.

AA, The *Falloppian* Tube Open'd, according to its Length.

BCC, Its Internal Membrane Divided and Expanded.

DD, A Probe Inſerted into its Beginning near the *Fundus Uteri,* which is not yet Divided.

The reſt of the Adjacent Parts of this Figure are Explain'd *Tab.* 51. *Fig.* 4.

Fig. 4.

The Inferior or Back-part of the ſame Impregnated *Uterus,* &c. Expreſt *Fig.* 1. Its Veſſels here being Injected with Wax.

AA, The *Fundus Uteri* ſomewhat Enlarg'd by reaſon its Veins are Injected with Wax.

BB, The Veins fill'd with a Dark Colour'd Wax:

C, The Arteries with Red Wax: Both which Veſſels become Diſtended by Injecting of their Large Trunks on either Side.

D, Part of the External Membrane of the *Uterus* deriv'd from the *Peritonæum,* Rais'd from the *Cervix Uteri.*

E, That Part of the *Peritonæum,* call'd *Ligamentum Latum Uteri.*

F, The *Ovaria* of the Left Side.

GG, The *Falloppian* Tubes alſo fill'd with White Wax, and very Tortuous in this Poſition, their Extremities being drawn from the *Ovaria.*

H, The Round Ligament of the Left Side.

II, The Broad Ligaments like Batt's Wings joining the *Falloppian* Tubes to the *Ovaria,* where the Blood-Veſſels paſſing to and from the *Ovaria,* are Expreſt.

KK, The *Vaſa Spermatica* cut off. Theſe Spermatick Veins and Arteries are not only Inoſculated in their Large Trunks, with the Hypogaſtrick Veins and Arteries of the *Uterus,* but thoſe of the Right Side of the *Uterus,* are Inoſculated with the Left, in ſuch Manner that by Injecting of Wax into one of the Spermatick Veins, it will not only fill the Hypogaſtricks, but the Spermatick Vein alſo of the contrary Side. The like will not happen by Injecting Wax into the Arteries, becauſe their Trunks are Smaller than the Veins. But Mercury readily paſſes from the Arteries of one Side to thoſe of the other.

Fig. 1.

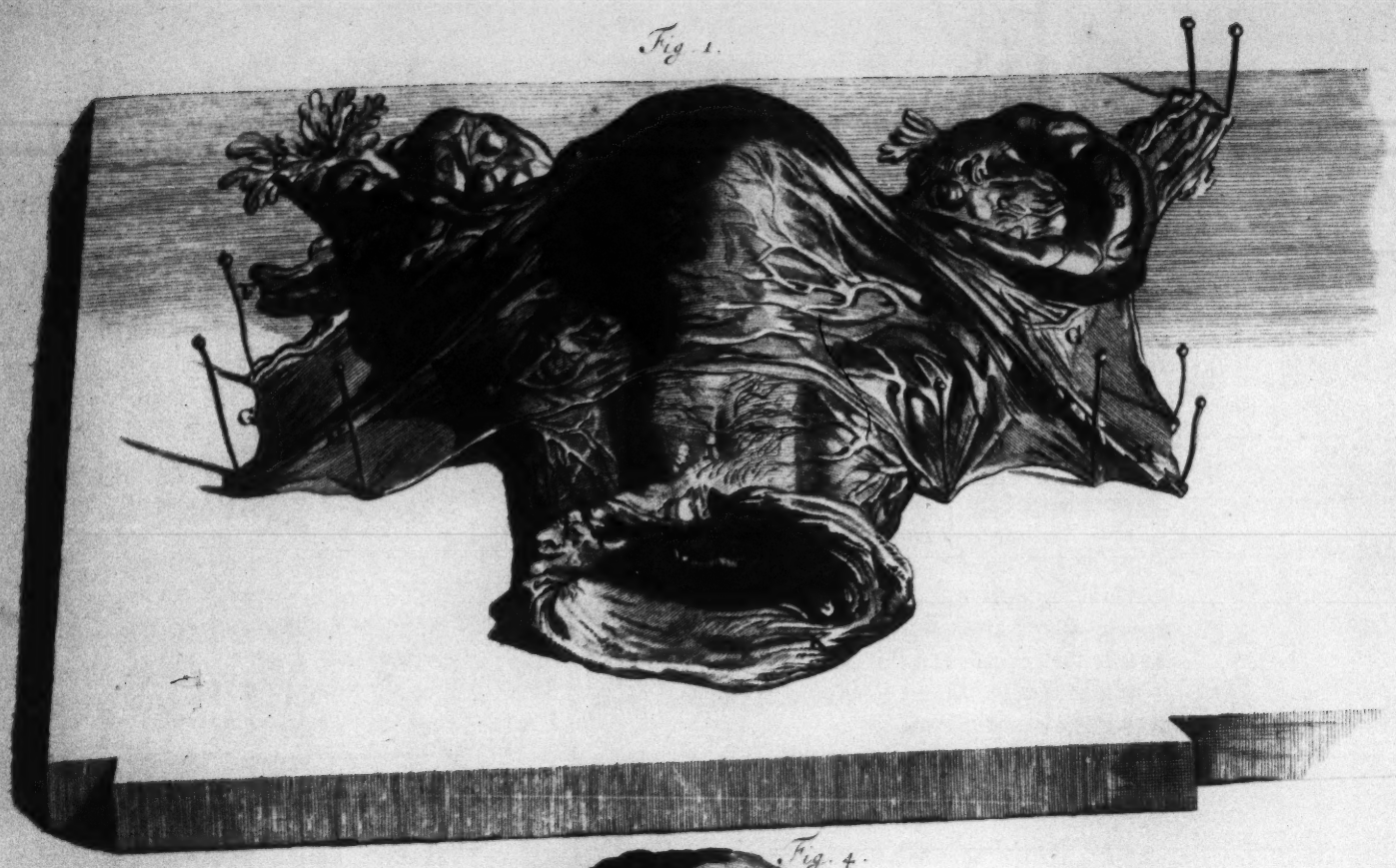


Fig. 4.

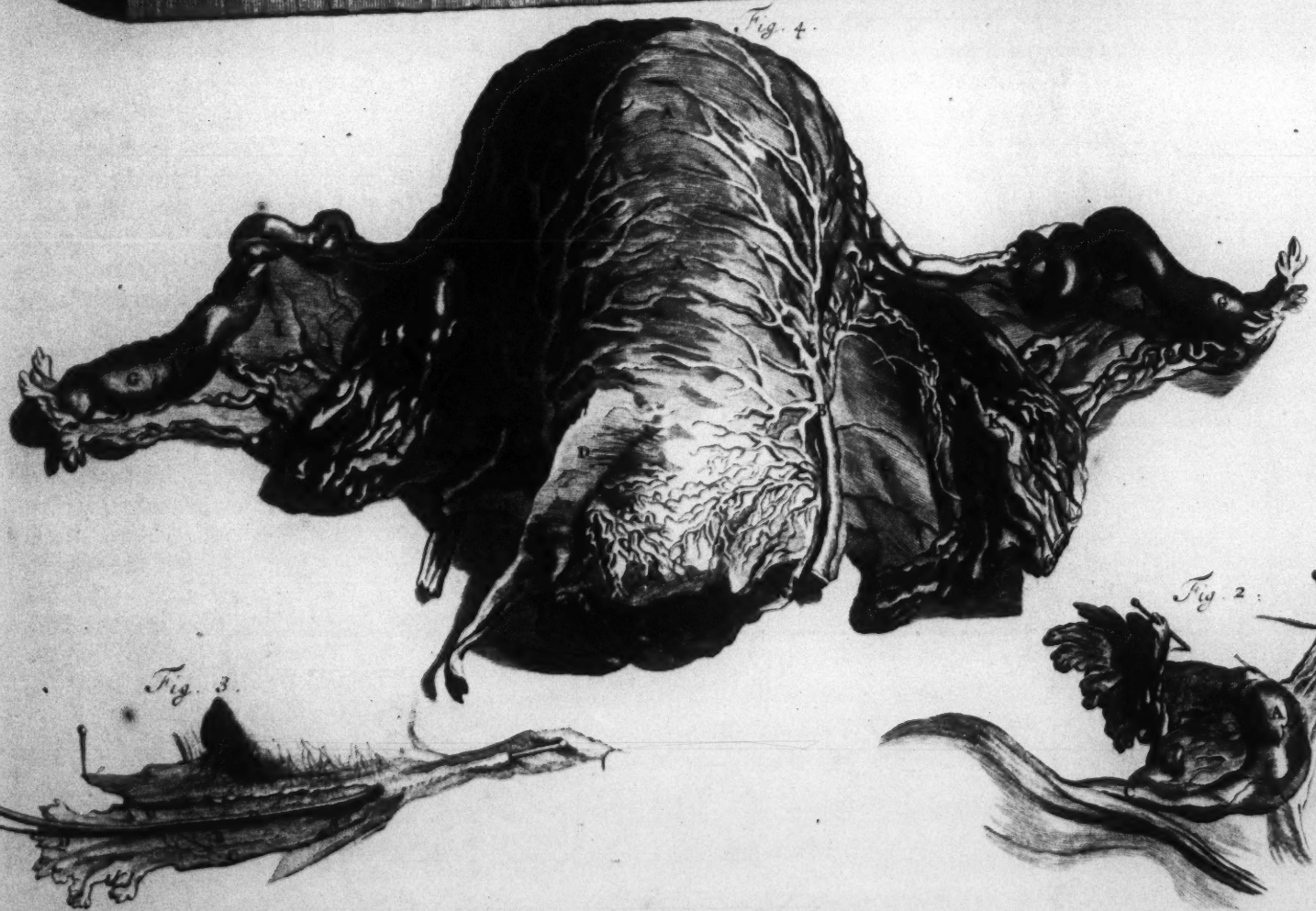
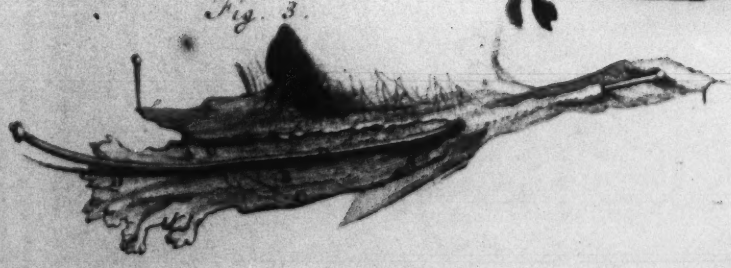


Fig. 2.

Fig. 3.




A
A
D
D
C
B
B

THE

FIFTY-FOURTH TABLE.

SHEWS the *Abdomen* of a Woman open'd after Seven Months gone with Child.

AAAA, The common Integuments of the whole Body divided and turn'd off.

BB, The proper Integuments of the *Abdomen*, viz. The Muſcles and *Peritonæum* in like Manner divided.

CC. The *Fundus Uteri* very much enlarg'd; and in this Subject enclines more towards the Right Side than the Left.

DDD, The *Colon* and Parts of the ſmall Gutts as they appear above the *Fundus Uteri*.

dd, The Muſcular *Compages* of Fleſhy Fibres call'd the *Ligamentum Coli*, well Expreſt.

E, That Part of the *Fundus Uteri* towards the *Collum minus*.

FFF, The Veins of the *Uterus* very much Dilated.

As the Time of the Birth draws on, ſo the Thickneſs of the *Uterus* is ſtill ſaid to encreaſe, and the Trunks of the Veins become ſtill more and more diſtended. The Trunks of the Arteries of the *Uterus* are alſo at that Time proportionably Dilated. Theſe Blood-Veſſels of the *Uterus* are inoſculated with thoſe of the *Placenta*, as may appear by the Paſſing of Mercury from One to the Other, ſo that if you pour it into the Hypogaſtrick Arteries of the Mother, it will paſs into the Veins of the *Placenta* as well as thoſe of the *Uterus*: And on the contrary the Mercury will paſs from the Arteries of the *Placenta* to the Hypogaſtrick Veins of the Mother, as alſo into the Veins of the *Placenta*. Hence it appears there is a Circulation of Blood between the Mother and *Fœtus*; and it ſeems as if the Blood-Veſſels of both did Germinate and Inoſculate with each other. But this requires too much Speculation for my Occaſions to admit of a farther Enquiry at preſent. Therefore I ſhall here only ſpeak of ſome *Phænomena* which offer in Child-bearing.

If the *Fundus Uteri* remain Tumifi'd after Child-bearing or an Abortion, the Flux of Blood proves very great and ſometimes deſtructive to the Mother, becauſe the *Uterus* do's not Collapſe, and by that Means cloſe the Orifices of the Broken-off Arteries of the Mother. The like Flux alſo happens from the ſame Cauſe, when but Part of the *Placenta* comes away in the *Partus*; in which Caſe the remaining Part ought to be remov'd as ſoon as poſſible.

THE

FIFTY-FIFTH TABLE.

IS the *Abdomen* of the ſame Woman Open'd, Repreſented in the Precedent Table.

A A A, The *Fundus Uteri* after a Crucial Section Expanded.

B B *Inferior*, The Inſide of the Skin Cover'd with Fat.

B B *Superior*, C C, The Inſide of the *Peritonæum.*

D D, Part of the *Colon* above the *Fundus Uteri.*

E E, The External Convex Surface of the *Placenta* free'd from the *Fundus Uteri.*

F G H, The Aſperities F, Little Hollowneſſes G, and Tubercles H, of the *Uterus*, which receive and were receiv'd by the like in the *Placenta.*

I K, Part of the *Chorion* cleaving to the Internal Concave Surface of the *Placenta.*

L, Part of the Urinary Membrane or *Allantoides.*

M, Part of the *Amnios* made bare, as it Appears fill'd with its containing Liquor.

Tho' this Membrane which immediately Involves the *Fœtus*, Appears in moſt Parts very Tranſparent, yet here are a vaſt Number of Blood-Veſſels every where diſpers'd thro' it. In divers Parts of the *Amnios* in Cows, I have more than once Obſerv'd Various Cluſters of ſomewhat Opacous Bodies, which I am apt to think are a Congeries of Glands, and help to Separate from the Blood, Part of the Contents of the *Amnios* in which the *Fœtus* mov'd, and is receiv'd by its Mouth towards the time of the *Partus.*

N, Part of the *Chorion* Rais'd from the *Amnios*, and Left to the *Uterus* it ſelf on the Right Side.

Part of the Liver Appears above the Inteſtines immediately under the Enſiformal Cartilage.

D

D

A

E

B

C

B

THE FIFTY-SIXTH TABLE.

THE *Abdomen* and *Uterus* of the ſame Woman (Figur'd in the Two precedent Tables) Open'd, after Seven Months gone with Child.

A, The *Placenta Uterina* free'd from the Upper Part of the *Uterus*, and drawn towards the Right Side, ſo that its Internal Concave Surface next the *Amnios*, Appears Cover'd with the *Chorion*; under which the Arboreous Diſpoſition of its Blood-Veſſels are elegantly Expreſt.

B, Part of the *Chorion* free'd from the *Amnios*, and Rais'd with the *Placenta*, to whoſe Concave Part it Adheres, and its continued (H) on the Umbilical Rope.

C, Part of the Urinary Membrane free'd from the *Amnios*, and cleaving to the *Chorion*.

DD, The *Uterus* with the *Chorion* Divided Croſs-ways and Expanded. The Inequalities of the Internal Surface of the *Uterus* are here Remarkable: Its Blood-Veſſels as well as thoſe of the *Placenta* not only Germinate, but Inoſculate with each other, as is above Noted.

EE, The Proper Integuments of the *Abdomen*, (*viz.*) the Muſcles and *Peritonæum* in like Manner Divided.

F, The *Fœtus* lying within the Tranſparent Membrane call'd *Amnios*.

G, The *Amnios* entire.

H, The Umbilical Rope Ariſing from the *Placenta*, and paſſing to the Navel of the *Fœtus*: Its Progreſs is Various, ſometimes it Marches over the Right Shoulder, ſometimes over the Left cloſe to the Neck; at other times it Aſcends towards the Breaſt, whence it is again Reflected to the Back of the *Fœtus*, and thence to the Navel. Tho' the Blood-Veſſels of the Umbilical Rope are Diſpos'd in the beſt Manner (*Vid. Tab.* 60. 62. *Fig.* 5.) to avoid their being Compreſt in any Contorted Poſition; yet it ſometimes happens either thro' the ſhortneſs of the Umbilical Rope, as in the Caſe mention'd by *Hildanus*, *Cent. II. Obſerv. LI.* or by the great Strugling of the *Fœtus in Utero*; that it is ſo Compreſt, that the Blood cannot paſs in its Veſſels: In which Caſe if an Abortion do's not happen, or if it is at the time of the *Partus*, and the Birth do's not preſently follow, the Dead *Fœtus* with its Secondines are retain'd in the *Uterus*; and if the Mother Survives, they do gradually Putrifie and come away; as Appears in the Hiſtory of a Caſe very well Atteſted in the Excellent Works of the above mention'd Author, where the Bones with Part of the Muſcles of the Limbs were taken out near the Navel of the Mother, ſome Months after the Secondines gradually came away at her *Pudendum*. A like Inſtance was lately Communicated to me by the Ingenious Mr. *Dale* the *Apothecary*, who was an Eye-witneſs of it in a Woman in the Country where he lives.

IKLMNOP, The *Fœtus* lying in the *Uterus* in its Natural Poſture.

The Poſture of the *Fœtus* in the *Uterus* varies very much, eſpecially towards the time of the *Partus*; this Order of it is then Inverſt, the Head at that time is downwards towards the Neck of the Womb. In the moſt eaſie Births, the Face is turn'd towards the Back-bones or *Os Sacrum*. If any Part, beſides the Head of the *Fœtus* offers it ſelf firſt, (except both Legs together,) the Birth proves Laborious, and ſometimes very Dangerous; wherefore the Operator in ſuch a Caſe is Oblig'd (if poſſible) to reduce thoſe Parts, and turn the *Fœtus* to the moſt Natural Order that can be.

FIFTY-SEVENTH TABLE.

AA, BB, DIVERS Eggs of a different Size taken from the *Ovaria* of a Maid.

Fig. 2.

An Egg Impregnated; in which the Branches and *Plexus* of divers Blood-Veſſels Appear.

Fig. 3.

A *Fœtus* with its Secondines, Twenty-five Days after Conception; in which the Rudiments of all the Limbs Appear.

A A, The *Placenta Uterina.*
B, The *Chorion.*
C, The Urinary Membrane according to *Bidloo.*
D, The *Amnios* Open'd.
E, The Umbilical Rope between the *Placenta* and *Fœtus.*
F, The *Fœtus.*

Fig. 4.

A *Fœtus* Forty Days after Conception, in which all the External Parts Appear Diſtinct.

Fig. 5.

A Maſculine *Fœtus* about Two Months and a Half after Conception; in which the Magnitude of the Head in Proportion to the reſt of the Body is Remarkable. The Conformation of the Bones at that time may be ſeen in the 100. *Tab. Fig.* 3,4.

Fig. 6.

An Abortive Three Months after Conception, or there abouts Dri'd; ſo that the Connection of its Bones may be ſeen in divers Parts.

Fig. 7.

A *Fœtus* of Eight Months taken out of the *Uterus,* together with its *Placenta,* &c.

A, A Male *Fœtus,* whoſe Hands are Contracted and Feet Contorted Inwards.
B C D, The Umbilical Rope continued in its wonted Progreſs between the *Fœtus* and *Placenta.*
E E, The *Chorion* covering the Internal Concave Surface of the *Placenta,* and its Arboreous Ramifications of Blood-Veſſels deriv'd from the Umbilical Rope.
F, Part of the Urinary Membrane.
G, Part of the *Ammios.*
H, A Portion of the *Chorion.*

Fig. 3.

Fig. 4.

Fig. 2. Fig. 1.

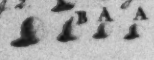


Fig. 7.

Fig. 6.

Fig. 5.

G
F
H
E

THE FIFTY-EIGHTH TABLE.

A, SHEWS the External Convext Surface of the *Placenta Uterina* free'd from the *Uterus*.

The *Placenta* is compos'd of Blood-Veſſels of both Kinds deriv'd from the Mother and *Fœtus*, which Frame Glandulous Bodies and Fibres, to which divers Succiferous Ducts are Inſerted, ſays *Bidloo*.

Theſe Succiferous Tubes and Glands I muſt confeſs never yet Occur'd to my Obſervation in Diſſection, nor do I at preſent know who beſides Profeſſor *Bidloo* mentions them : Here he only Names them among other Veſſels of the *Placenta*, and in *Tab.* 66. he Repreſents divers Succiferous Ducts in the Umbilical Rope; nor do's he any where mention what Juice theſe Ducts of the *Placenta* carry, or thoſe of the Umbilical Rope; wherefore I ſhall here Venture to add my Conjecture, and ſo proceed. If any Liquor Tranſcolated by Glands of the *Placenta* is convey'd towards the *Fœtus*, it is moſt likely that contain'd in the *Amnios*; and tho' we have Obſerv'd *Tab.* 55. divers Glands plac'd at Various Diſtances in the *Amnios* of Cows, yet we can by no means think they are ſufficient to ſupply that Membrane with a Neceſſary Quantity of Liquor for Entertaining the *Fœtus*: And ſince we have Obſerv'd divers Tubercles on the Surface of the Umbilical Rope, mention'd in the following Table (P). We cannot tell how to reconcile thoſe *Phænomena*, but by ſuppoſing the greateſt Part of the Liquor of the *Amnios*, is convey'd thither from the Glands of the *Placenta*, by the Ducts of the Umbilical Rope.

This Liquor of the *Amnios* not only ſerves to Facilitate the Motions of the *Fœtus*, but towards the time of the *Partus* it is partly receiv'd by its Mouth, and is convey'd into its Stomach and Guts, and Adminiſters Chyle to its Lacteals and Thoracick-Duct; which is receiv'd by the Subclavian Vein of the *Fœtus*, and there joins with the Blood Tranſmitted from the Mother to the *Fœtus*. Thus the Stomach and Inteſtines as well as the Common Paſſages of Chyle and *Lympha* of the *Fœtus* are imploy'd in the *Uterus*; by which means thoſe Channels are the more readily made uſe of, ſoon after the Birth, when the Infant has no other way of receiving its Nouriſhment but by the Mouth. The Chyle thus mingling with the Blood of the *Fœtus*, ſo Thins it, that its Circulation may be the better carried on by the weak *Syſtole* of its Heart; whereby its Blood may be again Diſcharg'd into the Hypogaſtrick Veins of the Mothers *Uterus*. The Liquor of the *Amnios* has another, as it were Accidental Uſe, in Lubricating the *Vagina* at the Time of the *Partus*; the *Fœtus* then breaking the *Amnios* by its Strugling, its Contents flow by the *Pudendum*, which they commonly call *The Breaking of the Water*.

B B, The Furrows or Clifts of the *Placenta*, which more or leſs Reſult from its Tubercles.

C C, The Tubercles of the *Placenta*, which are Thick and Large towards their Center, and Leſs towards their Circumference.

D D, The *Chorion* or External Membrane Involving the *Fœtus*, Varigated with Blood-Veſſels Springing from the *Placenta*, (and Umbilical Rope in ſome Animals) and the *Uterus* it ſelf in Humane Bodies.

E E, The Urinary Membrane call'd *Alantoides*, lying immediately under the *Chorion*, and cleaving to it by Veſſels and Fibres; it Environing the whole *Fœtus*, according to *Bidloo*.

The Exiſtence of this Membrane is much Doubted of in Humane Bodies. I muſt confeſs I never met with a Subject in which I could Diſcover it. The Midwives take Notice of a *By Water*, as they call it, near the Time of the *Partus*; which I am apt to think is the Contents of this Membrane breaking forth, which often happens ſome Weeks before the Birth, and no ill Conſequence follows.

F, Part of the *Amnios* or Internal Membrane Involving the *Fœtus*.

G, Part of the Umbilical Rope Tied.

THE
FIFTY-NINTH TABLE.

EXPRESSES the Membranes which Involve the *Fœtus*; together with the Internal Concave Part of the *Placenta* next the *Fœtus* and Umbilical Rope. Which altogether are call'd the Secondine, or After-Birth, or Burden.

A A, The *Amnios* Separated from the Urinary Membrane; Tho' the *Amnios* appears Tranſparent to the Naked Eye, it is full of Blood-Veſſels of both Kinds deriv'd from the Umbilical Rope: If Mercury is Injected into its Arteries and Veins, their Extremities will (by the Aſſiſtance of a Microſcope) appear continued to each other; as in a Preparation of Part of the *Amnios* I have now by me, taken from a Cow, mention'd in the 55th Table.

B B, A Portion of the Umbilical Rope ariſing from about the Middle of the Internal Concave Side of the *Placenta*.

C C, Part of the Urinary Membrane not free'd from the *Chorion*: In Cows and other Quadrupedes, it is Long and Unequal; whence it's call'd *Allantoides* or *Farciminalis*: It is plac'd between the *Amnios* and *Chorion*, and receives the Urine from the Bladder by the *Urachus* thro' the Umbilical Rope. The *Urachus* of Humane Bodies is ſcarce Pervious. I muſt acknowledge in the Subjects I have Examin'd, I could never make the Wind paſs from the Bladder of Urine into the *Urachus* in the Umbilical Rope; but I have conſtantly found the *Urachus* evidently Hollow from the Bottom of the Bladder to the Navel in a *Fœtus*, and very little further.

D D, The *Chorion* ſtrictly cleaving to the Internal Concave Side of the *Placenta*.

E E, The Cavities and Tracts of the Succiferous Ducts according to *Bidloo*.

F, The Umbilical Arteries Diſtended.

G G, The Internal Concave Surface of the *Placenta* next the *Fœtus*.

H I, The Ramifications of the Arteries tending towards the Circumference of the *Placenta*.

K K, The Large Ramifications of the Umbilical Veins Diſtended.

L, Their Leſſer Branches.

N N, Divers Indentations made in the Veins where the Arteries paſs over them.

O, The Concourſe of the Umbilical Veſſels to their Incloſure in the External Membrane of the Umbilical Rope (P).

P, That Part of the Umbilical Rope, whoſe External Surface in Cows is full of Tubercles, which we ſuppoſe are plac'd at the Extremities of the Succiferous Ducts, where they Diſcharge their Contents into the *Amnios*. This Part of the Umbilical Rope in theſe Animals we find Diſtended with a Mucilaginous Matter, ſomewhat Thicker than that contain'd in the *Amnios*, but like it in Colour.

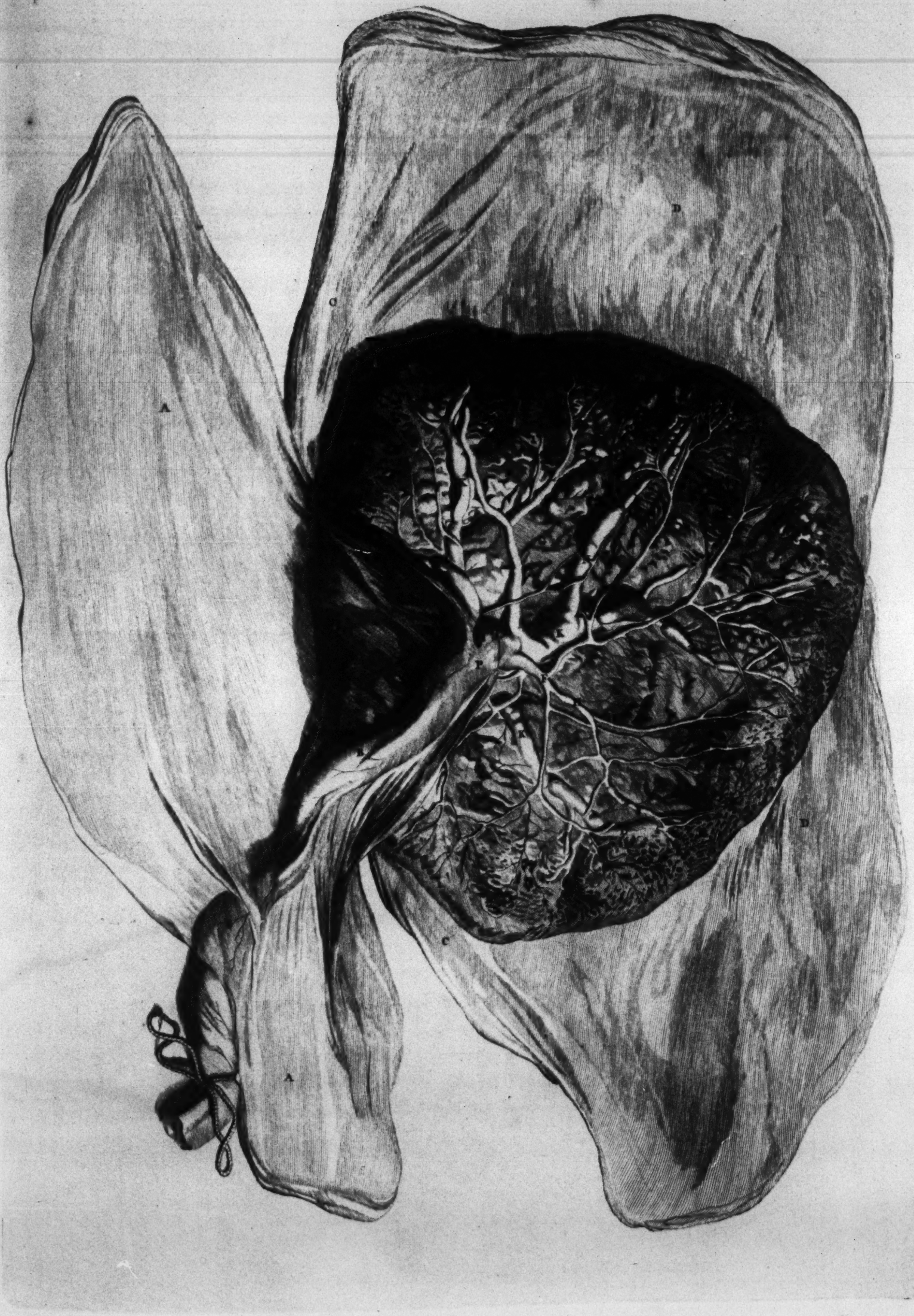

A
C
D
A
C
D

Fig. 5.

Fig. 3.

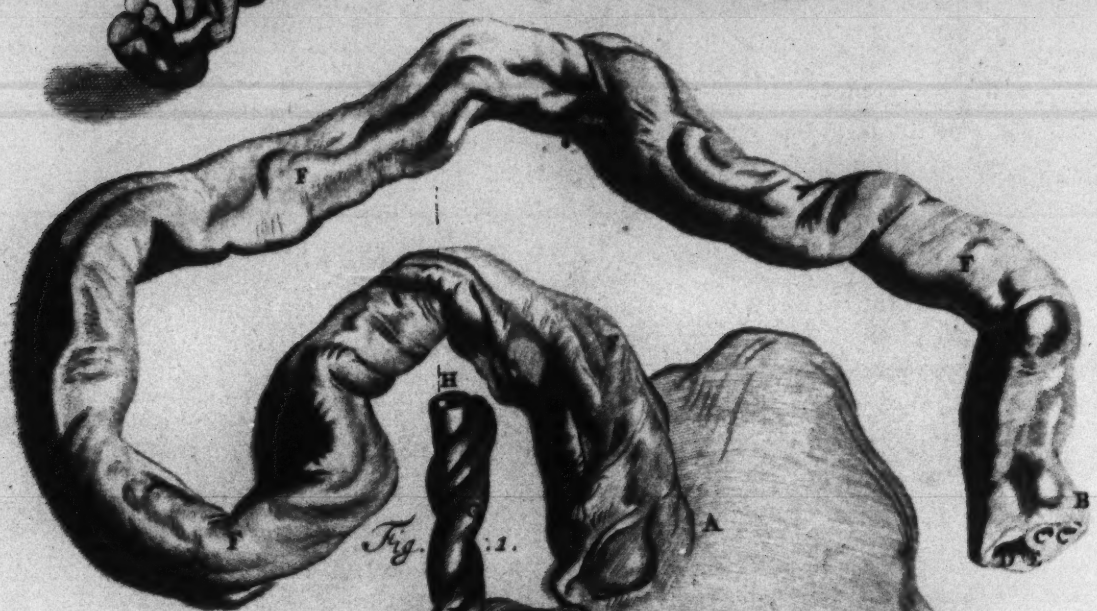


Fig. 1.

Fig. 2.

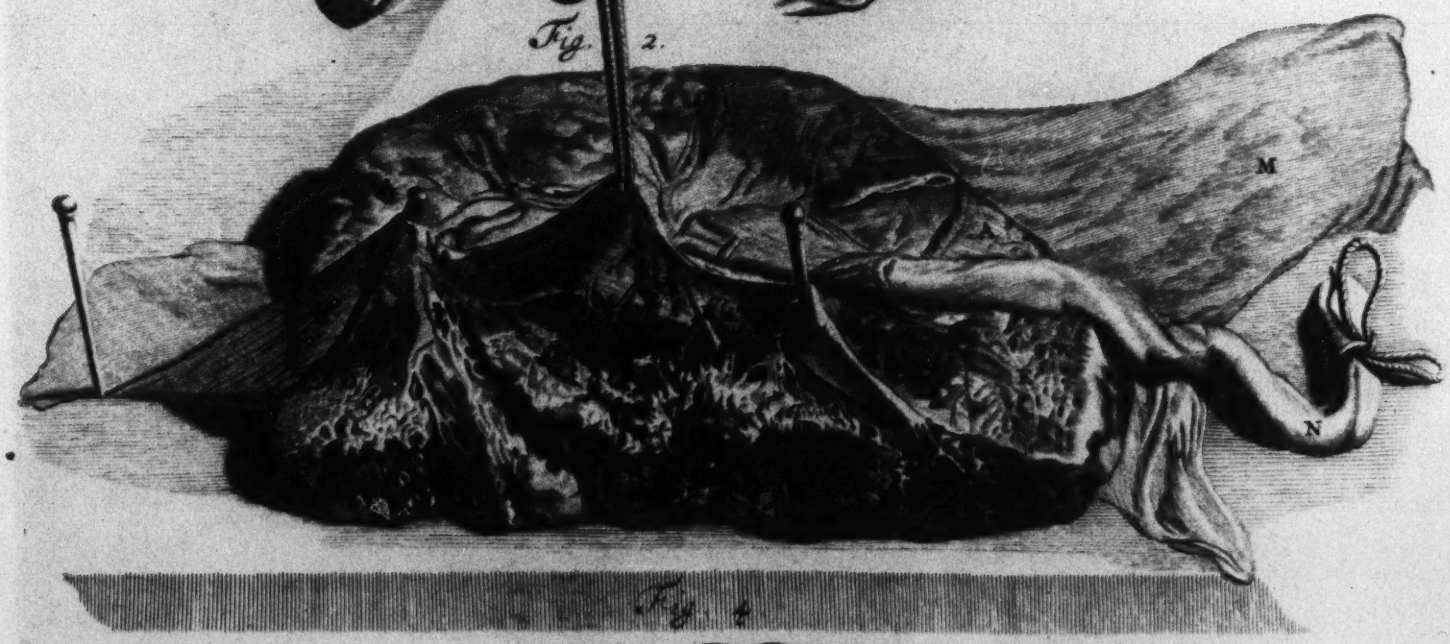


Fig. 4.

THE SIXTIETH TABLE.

Fig. 1.

DEMONSTRATES the Blood-Veſſels of Part of the Umbilical Rope and *Placenta* Injected with Wax.

A B, The Concave Internal Surface of the *Placenta* next the *Fœtus*.
C C, The *Chorion*.
D, Part of the Urinary Membrane according to *Bidloo*.
F F, *&c.* The Umbilical Arteries fill'd with Red Wax.
G G, *&c.* The Veins in like Manner Injected with White Wax.
H, The Umbilical Rope cut off.
I K M, The Propagations of Veſſels from the Umbilical Rope to the *Placenta*.

Fig. 2.

A A, The *Placenta* cut tranſverſly.
B C, The Thickneſs of the *Placenta* in a Tranſverſe Section.
D D. Its Glandulous Body.
E E, Some large Branches of Blood-Veſſels Propagated from the Umbilical Rope under the *Chorion*.
F, The Succiferous Ducts according to *Bidloo*.
G, Their little Hollowneſſes or *Interſtitia* like Fat.
H H, A Portion of the *Chorion*, free'd from the *Placenta* and ſuſpended.
I I, The Blood-Veſſels which lie between the *Chorion* and *Placenta*.
K K, Their Ramifications as they appear under the *Chorion* on the internal Concave Surface of the *Placenta*.
L, Part of the Urinary Membrane.
M, A Portion of the *Amnios*.
N, The Umbilical Rope cut off and ty'd.

Fig. 3.

The Umbilical Rope with Part of the *Chorion*.
A, Part of the *Chorion* free'd from the internal Concave Part of the *Placenta*.
B, The Umbilical Rope cut tranſverſly from the *Fœtus*.
C C, The Two Umbilical Arteries cut off.
D, The Umbilical Vein in like Manner divided.
E, The *Urachus* according to *Bidloo*, Expreſt in the following Figure between the Two Arteries.
F F, The Umbilical Rope cover'd with its looſe Membrane continu'd from the *Amnios*.

Fig. 4.

A A, The Umbilical Rope cut tranſverſly and view'd with a Microſcope, after its being immers'd in hot Water.
B, The Trunk of the Umbilical Vein divided.
C C, The Trunk of the Two Umbilical Arteries in like Manner cut off.
D D, The Succiferous Tubes alſo divided.
E E, The Fibres contracted by the hot Water.
F, The thin contorted Tube of the *Urachus*, lying between the Two Arteries like a looſe or flagging Membrane.

Fig. 5.

The Umbilical Vein and Two Arteries Injected with Wax and dry'd, ſo that the *Urachus* and Succiferous Tubes diſappear.

THE

SIXTY-FIRST TABLE.

Fig. 1.

AA, EXHIBITS the *Placenta Uterina*, after the Blood is Wash'd out of it.

B, The *Chorion* partly Rais'd from the *Placenta*, and lying Loosely on it.

C, Part of the Urinary Membrane according to *Bidloo*.

DD, The Contexture, and Reticular *Plexus* of the Vessels of the *Placenta* made bare.

EE, The Concave Surface of the *Placenta* next the *Fœtus*.

FF, The Blood-Vessels.

G, A Portion of the Umbilical Rope.

Fig. 2.

A, Part of the *Chorion* separated from the Urinary Membrane, and supported on a Piece of Paper.

BC, The Urinary Membrane Pinn'd out, from which the *Chorion* is separated.

DD, A Piece of Paper Rold up to support the *Chorion*.

Fig. 3.

ABB, Part of one of the Umbilical Arteries free'd from the Umbilical Rope, and Extended with Wind; in which the Various Inequalities of its Trunk (occasion'd by its Contortions with its Companion and the Umbilical Vein) are Expreſt.

CC, The same Artery Open'd according to its Length, and Expanded.

Fig. 4.

Part of the Umbilical Rope.

A *Inferior*, Part of the Umbilical Vein Open'd according to its Length.

ABB, The Umbilical Arteries inclos'd in their Proper Membranes.

Fig. 5.

A, Part of the Blood-Vessels of the Umbilical Rope Injected with Wax.

BB, The Two Arteries fill'd with Red Wax, in which may be observ'd the Inequalities of their Trunks.

C, The Vein Distended with a Dark Colour'd Wax.

Fig. 6.

AA, Part of the *Chorion* free'd from the *Placenta*.

BB, The Blood-Vessels of both Kinds free'd from the Glands Succiferous Tubes and Ducts, according to *Bidloo*.

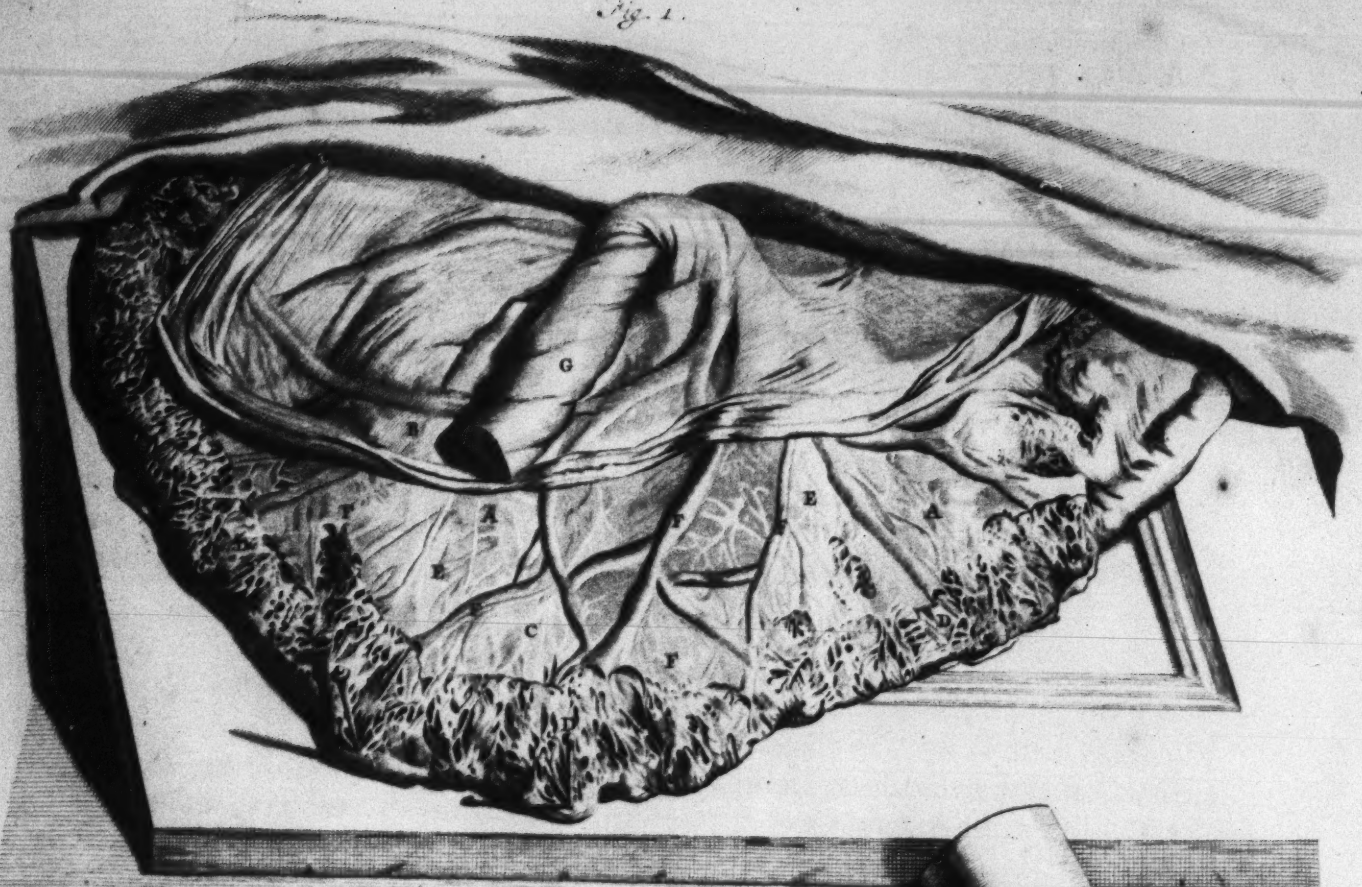
Fig. 7, 8.

The Branching of the Arteries and Veins on the *Chorion*, whose Capillary Extremities frame Glands, and Escape the Sight of the Naked Eye.

Fig. 9.

This is not taken Notice of by *Bidloo*; but I supose it Represents Part of the Blood-Vessels of the Umbilical Rope, free'd from their Membranes and not Injected with Wax, or any Thing else; the Trunks of the Two Arteries and Vein appearing Flaccid.

Fig. 1.



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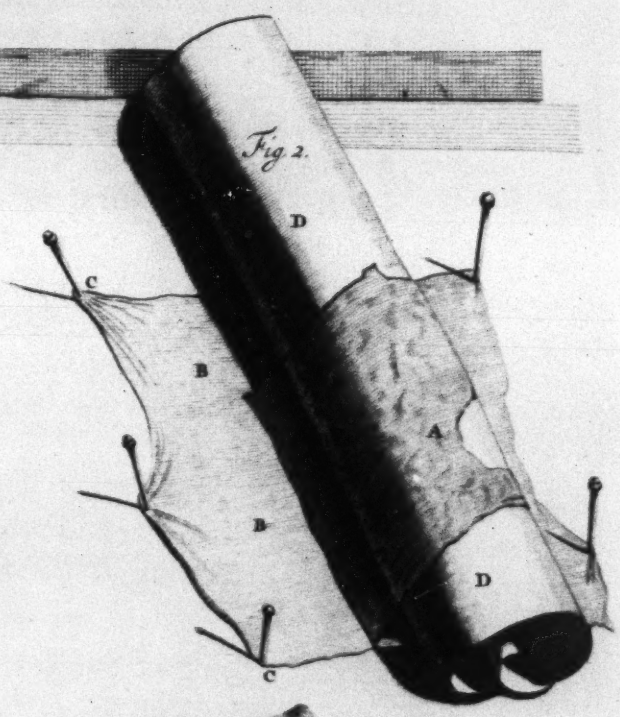

Fig. 4.

Fig. 5.

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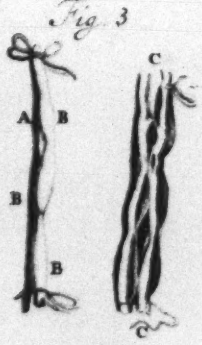

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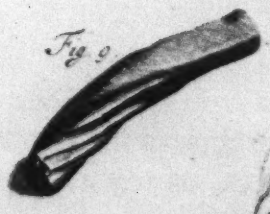

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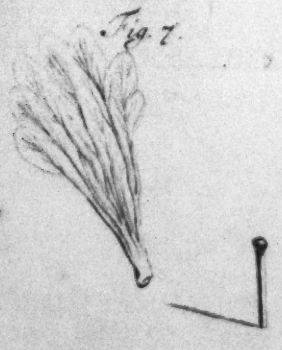

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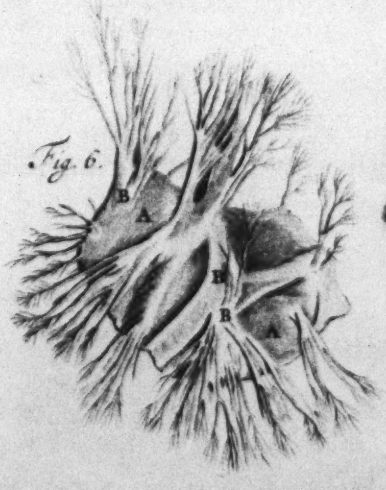

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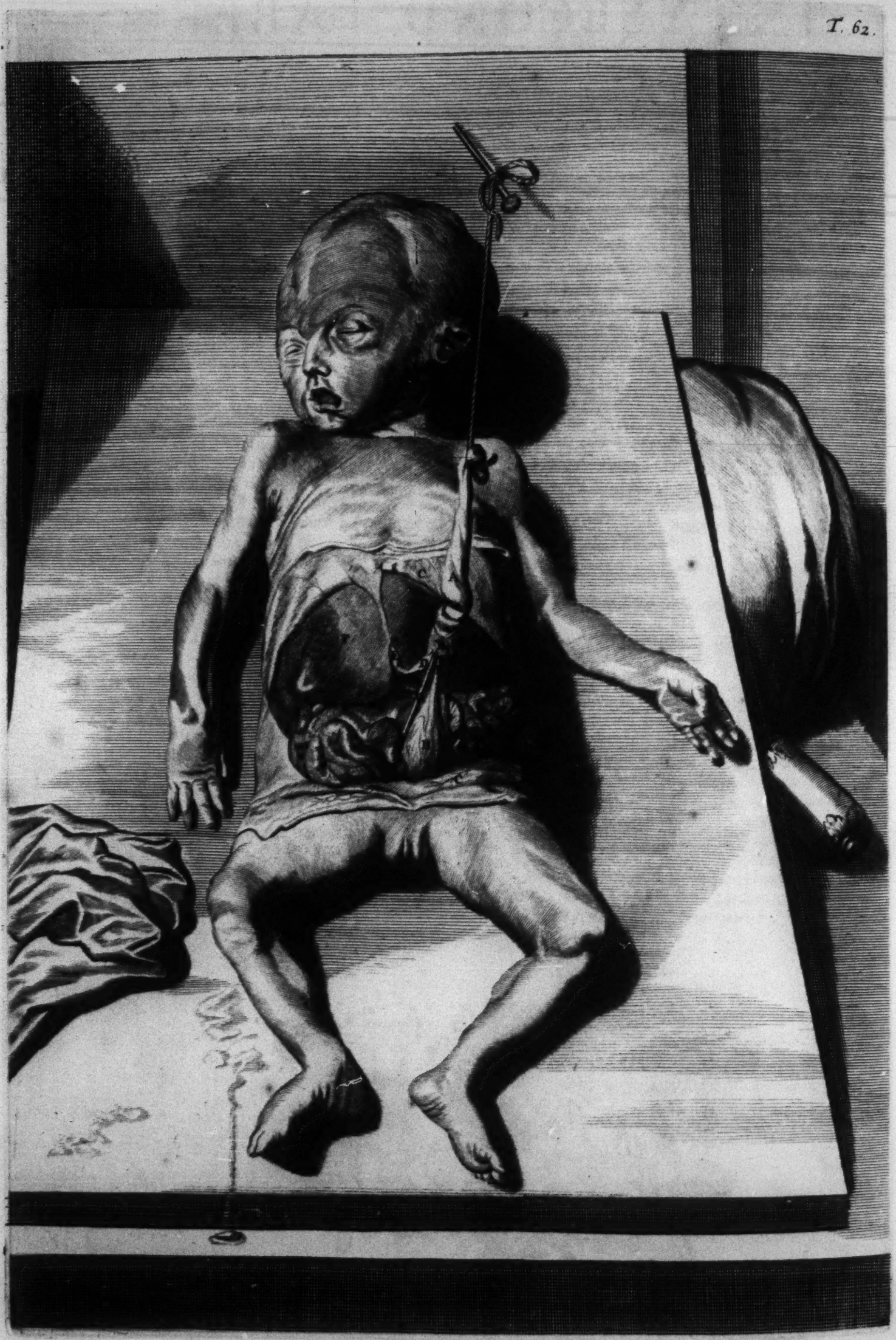


THE
SIXTY-SECOND TABLE.

THE *Abdomen* of a Female *Fœtus* Seven Months after Conception open'd, to ſhew the Progreſs of the Umbilical Veſſels towards its Navel.

A, The Umbilical Rope ſuſpended.

CC, The Common and Proper Integuments of the *Abdomen* turn'd aſide.

EG, The Umbilical Vein entering the Liver at a Fiſſure near the Middle of its lower Part, whence the *Ligamentum Suſpenſorium Hepatis* may be here ſeen continu'd to the Enſiformal Cartilage and Diaphragm.

F, The Liver, which in Proportion to the reſt of the *Viſcera* in a *Fœtus*, is very large, extending it ſelf to both *Hypochondria*.

The Magnitude of the Liver in a *Fœtus* rather Proceeds from a greater Quantity of Blood carri'd into it by the *Vena Umbilicalis*, than any proper Office it then Executes: This Diſproportion of the Liver do's not remit in an Infant, but ſeems to continue in ſome Meaſure, till they are Four or Five Years Old: Hence it is, that the Inteſtines of Infants and Children are ſuppli'd with more Gall than thoſe of riper Years; and are therefore incident to be gript much in the lower Belly, and attended with a *Diarrhœa*. Nor do I in this conceive Nature has any Ways committed a Miſtake; for ſure it is very neceſſary ſome notable Diſcharge ought to be made of the Seroſities in Children, whilſt their Limbs are not able to perform thoſe Exerciſes which promote Perſpiration and the like.

The Blood imported into the Liver by the Umbilical Vein meets with a contrary Current of Blood in the *Vena Porta*, as it paſſes the *Sinus* to the *Vena Cava*; whereby ſome of the Capillary Veſſels about the Liver or Umbilical Vein are frequently broken, and the Blood is diſcharg'd into the Cavity of the *Abdomen*.

In an Abortive Humane *Fœtus* (after Seven Months Conception) I found the *Abdomen* without any Integuments; its *Viſcera* being expos'd, as in this Figure: Nor could I find ſo much as any Part of the *Peritonæum* that had cover'd them; which I ſuſpected might have been broken. The Left Kidney alſo was expos'd to View. Beſides this, the Top of the Skull was wanting, and inſtead of it a Membrane diſtended with Grumous Blood. Very little Part of the Brain appear'd on the *Baſis* of the Skull, but it was chiefly contain'd in the *Specus* of the *Vertebræ* of the Neck. The Left Eye and Ear were wanting, as well as the Noſe. A Ligament of about an Inch in Length, faſten'd the great Toe of the Right Foot to the Bone of the upper Jaw. The Left Arm was wanting; and inſtead of it, ſomething like a Hand was fram'd, ſeeming to have a Thumb and Fore-Finger: This was ty'd by Two Ligaments; the one ſpringing from the *Carpus* was ſhort, and faſten'd it to the *Scapula*; the other Ligament was longer, and ariſing between thoſe Parts which repreſented a Finger and Thumb, was fixt to the *Baſis* of the Skull on the ſame Side.

Upon opening the *Thorax* I found the Cone of the Heart pointing upwards; its *Baſis* towards the Diaphragm. And both Extremities of the Baſtard Ribs of the Left Side reſting on their *Vertebræ*.

GG, The Two Umbilical Arteries Ariſing from the Two Internal Iliack Branches of the *Arteria Magna*, and paſſing on both Sides the Bladder of Urine to the Umbilical Rope.

H, The Bladder of Urine.

I, The *Urachus* where it is viſibly pervious.

The *Ligamentum Suſpenſorium Hepatis*, is here well Expreſt between the Umbilical Vein and Enſiformal Cartilage; and the Small Gutts in their Natural Situation, are alſo Repreſented.

THE
SIXTY-THIRD TABLE.

REPRESENTS the Cavities of the *Abdomen* and *Thorax* open'd of the ſame Female *Fœtus*, Expreſt in the preceding Table.

A, The Umbilical Rope ſuſpended.

B, The Umbilical Vein.

C, Its Inſertion into the Liver.

DD, The Two Umbilical Arteries, ariſing from the Two internal Iliack Branches of the *Arteria Magna. Vid. App. Fig.* 3. 56. 56.

EE, The External Iliack Branches of the Great Artery, by our Author ſaid to be Internal; which in this View of the Parts do's not appear.

FG, The *Urachus.*

H, The *Umbilicus* cut from the Common Integuments of the *Abdomen.*

I, The Head of the *Fœtus,* which in Proportion to the reſt of the Body is much larger than in the Adult: See the Deſcription at *Tab.* 1.

K, The *Mammæ*, which in a *Fœtus* of both Sexes contain a Serous Liquor.

L, The *Thorax* open'd.

MM, The *Abdomen* in like Manner open'd.

N, The *Thymus* in Proportion to the reſt of the Parts, is very large in a *Fœtus,* and gradually leſſens in the Adult: See *Tab.* 21.

O, The Heart, which in Regard to the other *Viſcera* is very large.

P, The Lungs on the Right Side.

QQ, The Kidneys, which appear Conglomerate, and are ſomewhat large.

RR, The Glands of the Kidneys or *Capſulæ Atrabilares* are alſo large, and are here remov'd from their proper Situation; they not only bordering on the Kidneys, as in the Adult, but lie upon them, embracing their Upper Parts: In this Figure they ſeem to be remov'd from their Proper Situation.

SS, The Ureters, which are alſo large and unequal.

T, The Bladder extended with Urine.

V, The Falloppian Tube, ſomewhat long, and very large in Proportion to the reſt of the Parts.

W, The *Ovaria* are alſo Large and Tumid.

X, The *Fundus Uteri* ſomewhat rais'd by the Suſpenſion of the Bladder of Urine.

a, The Round Ligament of the *Uterus* of the Left Side.

b, The *Arteria Magna,* where the Emulgent Arteries paſs to the Kidneys.

c, The Aſcending Trunk of the *Vena Cava* cut off.

dd, The *Diaphragma* divided.

e, The Spleen *in Situ.*

The Stomach and Inteſtines are here laid aſide.

f, The *Sternum* rais'd together with the Cartilaginous Endings of the Ribs, where the Mammary Veſſels on both Sides are Expreſt.

Fig. 2.

A, The Bladder of Urine of a *Fœtus.*

B, Its Ureters fill'd with Wax.

CDD, The Umbilical Vein and Two Arteries, according to *Bidloo*, which we cannot think to be well Expreſt.

E, The Deſcending Trunk of the *Arteria Magna.*

F, Its Bifurcation.

GG, Its Two Internal Iliack Arteries, whence the Umbilical Arteries ariſe.

THE

Fig. 1.

Fig. 2.

Fig. 5.

Fig. 1.

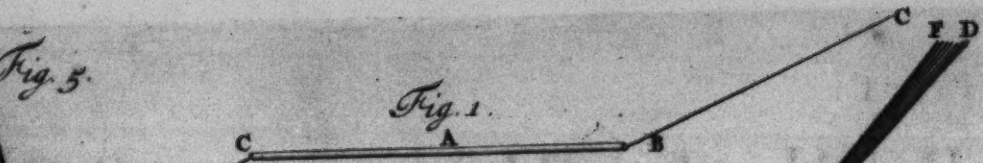


Fig. 2.

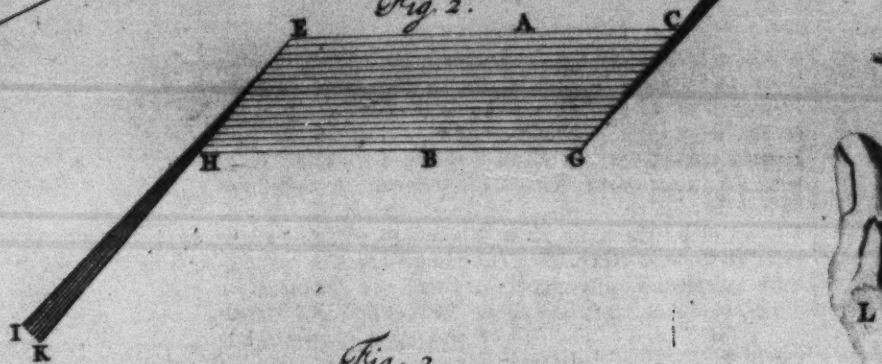


Fig. 3.

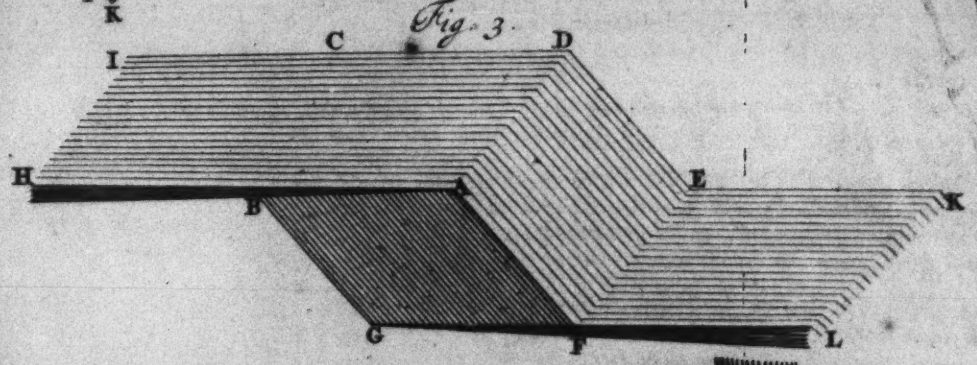


Fig. 8.

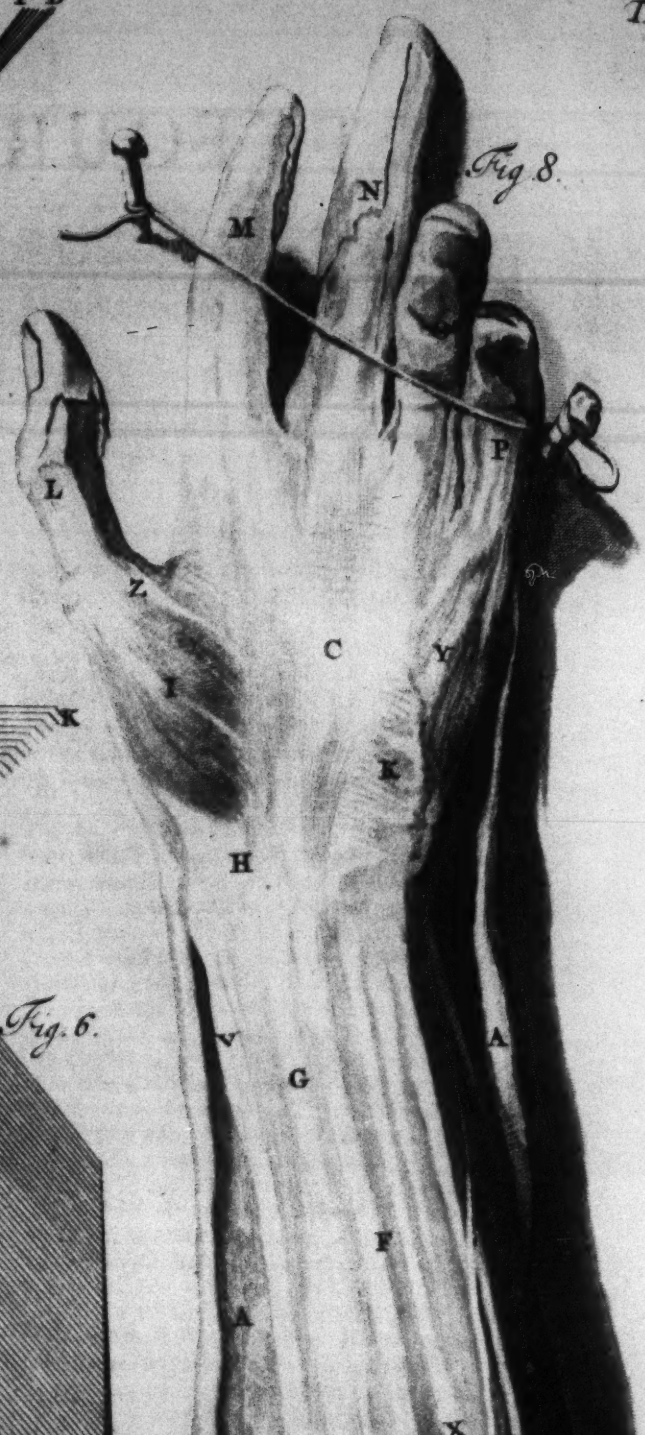


Fig. 7.

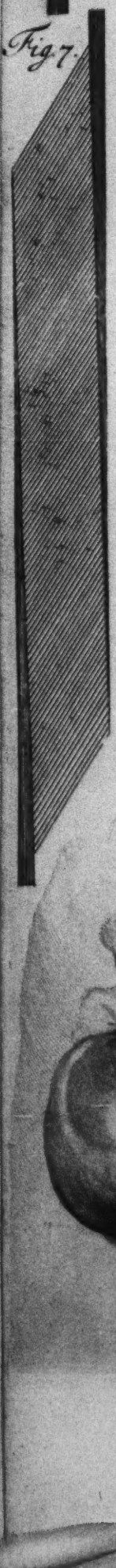


Fig. 4.

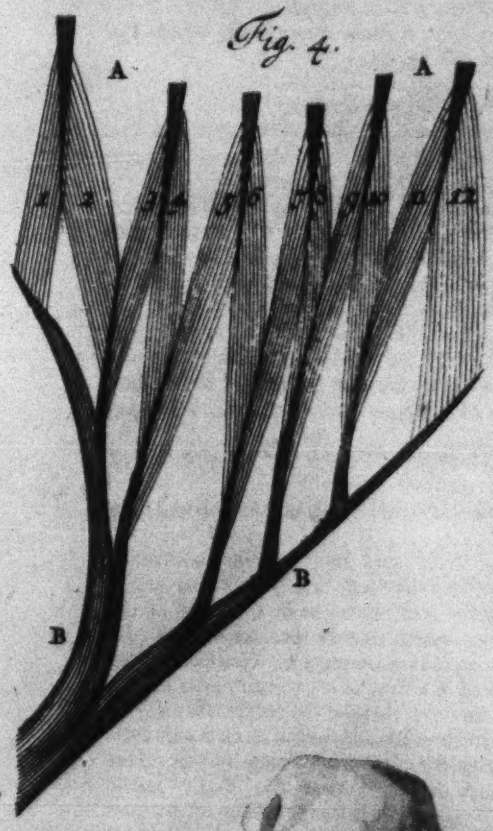
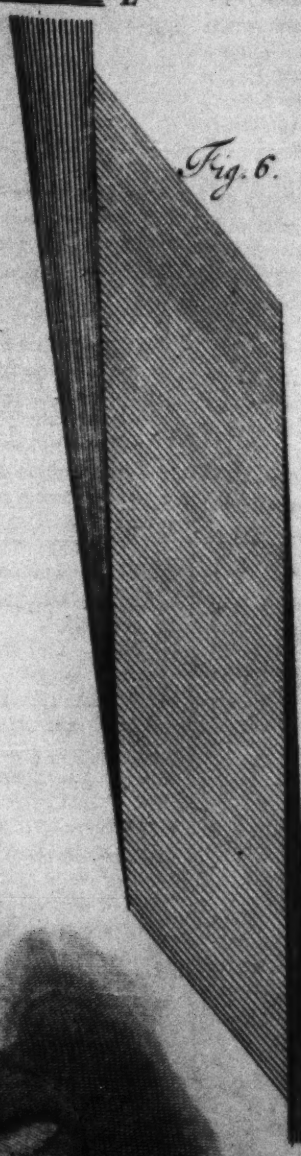


Fig. 6.



THE
SIXTY-FOURTH TABLE.

THE Profeſſor *Bidloo* in Imitation of *Steno* and *Bourdon*, here adds Geometrical Figures of the Diſpoſition of the Tendons and Fleſhy Fibres of divers Muſcles; Firſt of a ſingle Fibre.

Fig. 1.

A, The Fleſhy Part of the Fibre of a Muſcle;
B C, B C, Its Two Tendinous Extreams making Obtuſe Angles with the Fleſhy Part.

Fig. 2.

Many of the Fibres Repreſented in the Firſt Figure, Expos'd in the ſame Plan together, Framing an Oblique Angled Parallelogram.

A, B, The Order of the Moving, or Fleſhy Fibres.

C, D, F, G, } Their Tendinous Extremities: When any
E, H, I, K, } Additional Matter paſſes into theſe Fleſhy Fibres and Diſtends them, the Breadth which they thereby Acquire, neceſſarily Shortens them, and their Tendinous Extremities fixt to the moſt Movable Part, is pull'd nearer the more Stable. This Additional Matter we take to be the Blood, which is conſtantly in a Progreſſive Motion, as well in the Capillary as in the Larger Trunks of its Veſſels; and when a ſudden Stop or Retardation of it happens in the Trunks of the Veins in Muſcles, the Blood in the Extremities of thoſe Veins neceſſarily breaks forth by their Collateral Pores, and paſſes into the Cells of the Fleſhy Fibres; whence an Intumeſcence of thoſe Fibres follows, and their Length is neceſſarily Leſſen'd. When I ſay the Blood as a *Pondus* Acts in Muſcular Motion: I mean that as a Fluid, it Inſinuates where ever there is a Paſſage, and neceſſarily Diſtends the Cells of the Fleſhy Fibres, when it is puſh'd on by the Arteries, and do's not readily return by the Veins. This Structure of the Extremities of the Blood-Veſſels in Muſcles, renders the Appearance of their Fleſhy Fibres Red or more Bloody than other Parts, which are Furniſh'd with a far greater Number of Blood-Veſſels than the Muſcles; as the *Pancreas*, Salival Glands, and Cortical Part of the Brain. The Liver, Spleen, and Kidneys have their Colour, from the Number and Magnitude of their Blood-Veſſels always fill'd with Blood. The Queſtion is, How the Venoſe Channels are ſo inſtantaneouſly Compreſt that the Refluent Blood is Retarded? Till Enquiry and Obſervation affords me ſomething to the purpoſe, I ſhall ſay no more; chooſing to Recommend ſuch Speculations, to thoſe who have more Talent and Time to beſtow on them.

Fig. 3.

The Fibres of a Muſcle Framing a Simple Parallelepipede Figure.

A, B, C, D, E, F, G, The Carnous Part.
H I, K L, The Tendinous Parts.

Fig. 4.

The Diſpoſition of the Fibres of the *Muſculus Deltoides*, ſaid to be Compos'd of Twelve ſimple Muſcles.

A A, The Upper-part of the *Deltoides* towards the Top of the Shoulder.

B B, Its Lower-part.

1, 2, 3, 4, 5, 6, 7, } The Order of the Fleſhy Fibres which
8, 9, 10, 11, 12, } Frame Parallelograms, and Compoſe the *Deltoide* Muſcle, fixt to their Tendinous Extremities A B.

Fig. 5.

The Order of Fibres of the *Muſculus Biceps Humeri.*

Fig. 6.

The *Muſculus Membranoſus.*

Fig. 7.

The Fibres of Part of the *Gemellus.*

We come next to the Muſcles of the *Artus* or Limbs; and Firſt to thoſe of the Whole Arm, by which is underſtood all the Part faſtned to the Upper-part of the Trunk of the Body, Ariſing at the Shoulder. *Fig.* 8. The Arm in common Acceptation, is taken to be all that Part between the Neck of the Shoulder-blade and Wriſt (H). The Arm ſtrictly ſpeaking, is that Part between the Shoulder and Elbow (B), which, otherwiſe, is call'd *Humerus*: It conſiſting of One Bone, and is call'd *Os Humeri*, the Shoulder-bone, or Arm-bone. The Lower-part of the Arm from the Elbow (B) to the Wriſt (H), is call'd the Cubit, and conſiſts of Two Bones, call'd *Ulna* and *Radius*; we ſhall elſewhere ſpeak of the Articulations of theſe and other Bones. As ſome have Comprehended the Shoulder or Arm, Cubit, Hand, and Fingers under the Title of the Whole Arm; ſo others have call'd all thoſe together, *The Whole Hand.* The Hand in common Acceptation, is meant all that Part below the Cubit, or Wriſt, conſiſting of Four Fingers (M N O P) and a Thumb (L). The Palm (C) call'd *Vola Manus*; oppoſite to which is the Back of the Hand or *Dorſum Manus.*

Fig. 8.

The External Muſcles of the Arm, Cubit and Palm.

A A A, The Skin with its Parts Annext free'd from the Muſcles.

B, The Internal Tubercle of the *Os Humeri*, whence the *Muſculus Pronator Radii Teres*, *Palmaris Longus*, *Flexores Digitorum Communes*, and *Flexores Carpi* do Ariſe.

C, The Tendinous Expanſion of the *Palmaris Longus* in the Palm; where, near the Root of the Fingers it's Divided, to give Way to the Tendons of the *Flexores Digitorum.*

D, The *Biceps Cubiti.*

E, The *Pronator Radii Teres.*

F, The Long Tendon of the *Palmaris* deriv'd from a ſmall Fleſhy Bodied Muſcle, ſpringing from the Internal Protuberance of the *Os Humeri*, here Expreſt.

G, The Tendon of the *Radialis Flexor Carpi*, whoſe Deſcription may be ſeen *Tab.* 67, 68.

H, The Tranſverſe Ligament of the *Carpus.*

I, The *Abductor Pollicis* Ariſing from the *Ligamentum Tranſverſale Carpi*, and Ending at the Superior and External Part of the Second Bone of the Thumb. It draws the Thumb from the Fingers, whence it derives its Name.

K, The *Palmaris Brevis*, or *Caro Muſculoſa Quadrata*; This ſprings from the External Part of the *Os Metacarpi Minimi Digiti*, with a Thin Tendon Encompaſſing the External Part of the *Abductor Minimi Digiti* becoming a Thin Diſgregated Fleſhy Muſcle in the Palm, as it is here Repreſented; it paſſes under the Tendon of the *Palmaris Longus*, to its Tendinous Termination in the Eighth Bone of the *Carpus.*

This Hollows the Palm by drawing the Bale of the Thumb or *Mons Lunæ*, and Metacarpal Bone of the Little Finger, nearer each other.

L M N O P, The Thumb and Four Fingers, with Part of the Skin remaining on them.

Q, The Head of the *Os Humeri* which was Articulated with the *Scapula.*

R R R, The Blood-Veſſels and Nerves paſſing withinſide the Arm, between the *Muſculus Biceps* and *Gemellus*, of which the Former eſpecially the Arteries are to be Compreſt in the time of Amputation; which may be perform'd with the Fingers only, without any Compreſs or Boulſters under them; or with the hard Twiſting of a Ligature, which ſome uſe: The Compreſſion being thereby the more eaſily Commanded, to let the Arterious Blood paſs out in Order to Diſcover the Divided Large Arteries, ſo that they may be taken hold of with the Ends of the Forceps and Ti'd; which Practice we can't but Recommend in Amputations, or in other Caſes where Large Fluxes of Blood happen. Nor have I found any conſiderable Inconveniency to the Patient, tho' the Trunk of the Nerve has been alſo Ti'd up with the Artery, which the Diligent Operator may very eaſily avoid.

S, Part of the *Muſculus Deltoides.*

T, Part of the *Gemellus* or *Biceps Externus.*

V V, The Tendinous Part of the *Muſculus Supinator Radii Longus.*

W, The *Flexor Carpi Ulnaris.*

X, Part of the *Muſculus Flexor Digitorum Perforatus.*

Y, The *Abductor Minimi Digiti.*

Z, *Flexor Primi & Secundi Oſſis Pollicis*; It Ariſes Fleſhy from the *Ligamentum Tranſverſale Carpi*, Bones of the *Carpus* at the Bottom of the *Mons Lunæ*, and *Os Metacarpi* of the Middle Finger; whence paſſes to its Inſertion partly to the *Oſſa Seſamoidea* of the Second Internode, and partly to the Firſt Bone of the Thumb: This Diſgregated Fleſhy Muſcle is very Diviſible as *Veſalius* takes Notice, and Appears *Tab.* 28. M N O O P. It moves the Thumb Variouſly according to the ſeveral Diſpoſition of its Series of Fibres, Inclining its Firſt and Second Bones, either Directly or Obliquely towards the *Carpus* and Palm.

THE

SIXTY-FIFTH TABLE.

REPRESENTS divers Muſcles of the Arm and Cubit.

A, The *Muſculus Deltoides* Rais'd from its Origination and left at its Inſertion.

B, The *Clavicula* made bare.

C, That Part of the *Deltoide* Muſcle, which Ariſes from the *Spina Scapulæ*.

D, The *Pectoralis* cut from its Original, and left at its Implantation.

d, The *Rotundus Major*: It Ariſes from the Inferior Angle of the *Scapula*, and becoming a round Fleſhy Body, paſſes under the Superior Head of the *Gemellus*, where it Grows Thinner and makes a Broad Flat but ſhort Tendon Implanted below the Neck of the *Os Humeri*. Its Office is to draw the Arm Backwards and pull it ſomewhat Downwards.

E, The *Subſcapularis* or *Immerſus*: It fills the Internal Concave Part of the *Scapula*, Ariſing Fleſhy from its whole *Baſis* and Superior and Inferior *Coſta* Internally, and in its Progreſs Leſſens its ſelf according to the Configuration of the *Scapula*, and Running over its Juncture; it's Inſerted to the Neck of the *Os Humeri* in a Semicircular Manner. This draws the Arm to the Trunk of the Body, and is made Uſe of by the Bag-pipe-Player to Compreſs his Bellows under his Arm.

F, The *Coracobrachialis*: Its partly Fleſhy and partly Tendinous Origination, is at the extream Point of the *Proceſſus Coracoides Scapulæ*, in its Deſcent Growing Thicker, ſtrictly Adhering to the Internal Head of the *Biceps*, which it Parts from near its partly Tendinous and partly Fleſhy Inſertion, about the Middle of the Internal Part of the *Os Humeri*.

f, A Trunk of a Nerve which paſſes thro' the laſt Deſcrib'd Muſcle; whence it's alſo call'd *Perforatus*.

GG, The *Baſis Scapulæ*.

H, The *Proceſſus Coracoides Scapulæ*.

I, The *Biceps* whoſe Two Heads or Tendinous Beginnings are here Expreſt; the one Ariſing from the *Proceſſus Coracoides* (H) call'd the Internal Head, the other Springing from the Upper-part of the Brink of the *Acetabulum Scapulæ* under the broad Ligament of the Articulation, and is call'd the External Head, paſſing in a *Sulcus* or Channel on the Head of the Arm-Bone (*Vide Tab.* 96. *Fig.* 1. D, E,) wherein it's incloſ'd by a Proper Ligament: In its Deſcent becomes Fleſhy, and joins with its other Head, Compoſing a Large Fleſhy Muſcle, which becomes Leſs near the Articulation of the Cubit with the Shoulder-Bone, and preſently Growing perfectly Tendinous, which Tendon is again Divided into Two; the External being Thin, paſſes over the *Muſculus Pronator Radii Rotundus*, and makes an External Incloſure to all the Muſcles on the Cubit. (*Vide App. Fig.* 1. m.) The Internal (which is Short Thick and Round, as it is here Expreſt) is faſtned to a Protuberance near the Upper-part of the *Radius*. (*Vide Tab.* 96. *Fig.* 6. A.) When this Muſcle Acts, it Bends the Arm: Beſides its common Office to which its Lower External Tendon alſo more Advantagiouſly Contributes, by how much the more it Approaches towards the other Extream of the *Radius* from the *Os Humeri*: This Lower Tendinous Expanſion, by us call'd *Faſcia Tendinoſa*, has alſo a further Uſe in Corroborating the Muſcles of the *Carpus* and Fingers in their Strenuous Actions, whoſe Office we have Endeavour'd to Explain in our Treatiſe of the Muſcles, where an Extraordinary Caſe in Practice, relating to this Muſcle, is Explain'd. *Vid. Myotomia Reformata*, Pag. 149.

K K, The *Brachiæus Internus*: It Ariſes Fleſhy from the Internal Part of the *Os Humeri* at the Terminations of the *Deltoides* and *Muſculus Coracobrachialis*, and Deſcending over the Juncture of the Cubit with the *Os Humeri*, it's Inſerted partly Fleſhy and partly Tendinous to the Superior and Fore-part of the *Ulna*, and Part of the *Radius*, as this Figure Expreſſes; which Latter I muſt confeſs I never yet Obſerv'd in Nature. It Bends the Cubit.

L, Part of the *Brachiæus Externus*.

M, The Internal Protuberance of the *Os Humeri*.

N, The *Ulna*.

O, The *Radius*.

THE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THE

SIXTY-SIXTH TABLE.

DIVERS Muſcles of the Arm and Cubit.

A, The *Biceps* free'd from its Subjacent Muſcles.

B, The *Brachiæus Internus in Situ.*

C, D, E, The *Biceps Externus* or *Gemellus*: It has a Twofold Origin; the Firſt (C) or Superior, Ariſes Tendinous from the Superior Part of the Inferior *Coſta* of the *Scapula* Internally, and Marching out from between the Two Round Muſcles, ſoon Grows Fleſhy, and joins with its Second Beginning (D), which Ariſes Broad and Fleſhy from the Upper and Back-part of the *Os Humeri* under the *Deltoide* Muſcle; ſoon after the Conjunction of theſe Two Heads, it becomes Externally Tendinous (E), and is ſo Implanted to the Superior and External Part of the *Ulna*, call'd *Olecranum*, *Ancon*, or the Elbow. Its Office is to Extend the Cubit, which it do's the more Advantageouſly, by how much the more it is Intertext with Various Orders of Fibres. Hence it comes that Tumblers when they ſtand on their Hands, can by the ſudden Extenſion of their Cubits, immediately return to their Feet.

F, The *Infraſpinatus*: It lieth below the Spine of the *Scapula*; It Ariſes Fleſhy from the Inferior Part of the *Baſis Scapulæ*, alſo from its Spine and Inferior *Coſta* (in thoſe Bodies in whom the *Teres Minor* is wanting, as I am apt to think, it was in the Subject by which this Figure was taken) whence Marching in a Triangular Form according to the Figure of the Bone, it's Inſerted to the Upper-part of the Head of the *Os Humeri*. This moves the Arm directly Backwards.

G, The *Supraſpinatus*, it being plac'd above the Spine of the Shoulder-blade. It Ariſes Fleſhy from the Superior Part of *Baſis Scapulæ* that's above the Spine, as alſo from the Spine and *Coſta* Superior of the Shoulder-blade, and hence Marching between the *Proceſſus Coracoides* and *Anchoriformis*, becoming Tendinous as it Marches over the Juncture of the *Humerus*, and is ſo Inſerted to the moſt Superior Part of the Shoulder-bone. It's Office is to lift the Arm Upwards and ſomewhat Backwards towards the *Occiput*.

H, The *Spina Scapulæ*.

II, The *Clavicula*.

✠ The *Subclavian* Muſcle, free'd from the firſt Rib and remaining on the *Clavicula*.

K, The *Rotundus Major*.

L, The *Os Humeri* made bare.

M, The External Protuberance of the laſt nam'd Bone, whence the Extending Muſcles of the *Carpus* and Fingers do Ariſe.

N, Part of the *Supinator Radii Brevis*, as it Ariſes from the *Ulna*, and paſſes over the Upper-part of the *Radius*,

O, The *Ulna*.

XX, The *Deltoides* Ariſing from above one Third of the Inferior and External Part of the *Clavicula* (II), where it is intirely Fleſhy; it alſo Ariſes partly Fleſhy and partly Tendinous, from the whole Inferior Margin of the *Spina Scapulæ* (H), from hence Deſcending, ſoon becomes Thick and Fleſhy, Growing ſtill Narrower, till it is Inſerted by its partly Fleſhy and partly Tendinous *Apex*, to the Middle of the *Os Humeri* (L). This draws the Arm either directly Upwards, or ſomewhat Forwards, or Backwards according to the Direction of its differing *Series* of Fibres.

THE

SIXTY-SEVENTH TABLE.

SOME of the Muſcles Employ'd in Bending the Fingers and *Carpus*.

A, B, C, D, E, The *Perforatus*, or *Sublimis*, or *Flexor Secundi Internodii Digitorum*, Diſſected from its Original: It Ariſes partly Fleſhy and partly Tendinous, from the Internal Extuberance of the *Os Humeri*, between the *Flexores Carpi*: It has alſo a Diſgregated Fleſhy Origination from the Fore-part of the *Radius*, between the *Pronator Radii Teres*, and *Flexor Pollicis Magnus*, ſoon Compoſing a Fleſhy Belly, Leſſens its ſelf where it begins to Divide into Two Parts, each of which being again Subdivided, makes Four Roundiſh Tendons (cccc), included in their Proper Mucilaginous Membranes, and paſs under the Annular Ligament of the *Carpus* thro' the Palm: Near the Firſt Internode of the Fingers, each of theſe Tendons are again Divided or Perforated (E), to admit the Tendons of the following Muſcle to paſs thro' 'em; theſe Tendons joining again, are Inſerted to the Superior Parts of the Second Bone of each Finger.

F, G, H, I, *&c.* The *Perforans in Situ*; it's alſo call'd *Profundus* and *Flexor Tertii Internodii Digitorum*: It Ariſes Fleſhy from near Two Thirds of the Superior and Fore-part of the *Ulna*, and Internal Edge of the *Radius*, as alſo from the Ligament between the *Radius* and *Ulna*; it becoming a Large Thick-Bellied Muſcle; it Grows Outwardly Tendinous before it paſſes over the *Pronator Radii Quadratus*, where Dividing into Four Round Tendons, which March under thoſe of the *Perforatus* (laſt Deſcrib'd) beneath the Tranſverſe Ligament of the *Carpus*, where the Lumbrical Muſcles M, M, M, M, are ſaid to Ariſe: Theſe Tendons paſs the Palm H, H, H, H, and run thro' the Tendons of the former Muſcle and proceeding over their Extremities, Terminate in the Superior and Fore-part of the Third Bone of each Finger IIII.

The Tendons of the Firſt of theſe Two laſt Deſcrib'd Muſcles A, B, C, D, being Perforated E, to Tranſmit thoſe of the Inferior Muſcle F, H, and to their Inſertions I, *&c.* is a no leſs Uſeful than Stupendious Artifice in Nature: For ſince its requiſite the Fingers ſhould be Bended with a conſiderable Strength, and each of their Internodes ſhould be Accommodated to different Tactile Bodies, it was therefore Neceſſary the Muſcles employ'd in that Action, ſhould not only be Large, Proportionable to the Force required; but that each Internode ſhould be Furniſh'd with a Particular Inſtrument. The Internal Protuberance of the *Os Humeri*, being a Neceſſary place for the Riſe of Part of theſe Muſcles; but upon the Account of Bending the Cubit, the Extreams of that Part of them might ſuffer ſome Approximation; it was therefore thought fit, that Place ſhould be allotted to the Bender of the Second Internodes of the Fingers, to which not ſo much Force is requir'd, as to the Bender of the Third Internodes; for the Fingers like ſo many Leaves are more effectually mov'd, when the *Vis Movens* is faſtned to their Extreams, which is their Third Internodes; wherefore the Strongeſt Muſcles are there Inſerted: Now the Origin of the Superior Muſcle being confin'd to the Internal Extuberance of the *Os Humeri*, and Part of the *Radius* only, theſe Places could not Furniſh Spaces for a Muſcle ſo Large as that of near Two Thirds of the Superior and Forepart of the *Ulna*, Internal Edge of the *Radius*, and Intermediate Ligament of the Bones of the Cubit, whence the Inferior Muſcle Springs: Hence it Appears the Inferior Muſcle is much Stronger than the Superior; wherefore the Tendons of the Latter are Perforated, to Tranſmit thoſe of the Former in a right Progreſs to their Terminations, at the Extremities of the Fingers: Nor is this Conſtructure only Advantageous in Bending the Fingers only; but if the External Muſcle ſhould be Divided Tranſverſely, as I have ſometimes ſeen it; yet the compleat Flexion of the Fingers has nevertheleſs been perform'd by the Internal Muſcle; which is a provident Contrivance in Nature.

K K, The Mucilaginous Membranes which Involve the Tendons of the *Perforans*, thoſe of the *Perforatus* not being Expreſt in this Figure.

L L, The *Ligamentum Tranſverſum*, or *Annulare* Divided.

M M, The *Lumbricales*, or *Flexores Primi Internodii Digitorum*. The Originations and Progreſs of theſe are here ſo well Expreſt, that they need no other Deſcription.

N N, *&c.* The Tendons of the Lumbrical Muſcles paſſing to their Terminations, with the *Muſculi Inter-Oſſei*.

O O, The Annular Ligaments of the Fingers Open'd, which keep in the Bending Tendons, when they Act.

P, The *Abductor Pollicis*.

Q Q, The Tendon of the *Flexor Pollicis Longus*.

R R, *Flexor Secundi Internodii Pollicis*.

S, The Trunk of that Nerve whoſe Branches are Propagated to the Fingers.

T, The Long Tendon and Bellied Part of the Muſcle *Palmaris*.

V, The *Radialis Flexor*.

W, Part of the *Ulnaris Flexor*.

X, Part of the *Supinator Radii Longus*.

Y, The Artery whoſe Pulſation is commonly Felt near the *Carpus*.

Z, *Pronator Radii Quadratus*, partly in Sight.

*, The Internal Protuberance of the *Os Humeri*.

✠, *Pronator Radii Teres*.

†, The Lower Part of the Bicipital Muſcle.

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THE SIXTY-EIGHTH TABLE.

THE Muſcles Bending the Fingers, Thumb, *Carpus*, &c. Rais'd from their Originations, and left at their Inſertions.

a, The *Perforatus*.

b, The *Perforans*.

c c, *&c.* The *Lumbricales*.

d, d, The Six *Inter-Oſſei* Muſcles free'd from between the Metacarpal Bones, and left at their Inſertions in Conjunction with the Tendons of the *Extenſor Digitorum Communis*. Theſe draw the Fingers to each other, and Aſſiſt in Extending them.

e, The Fore-finger.

A, The *Pronator Radii Teres*, or *Rotundus*: It Ariſes from the Internal Protuberance of the *Os Humeri*, and in its Oblique Deſcent, Cleaves to the *Flexor Carpi Radialis*, Leſſening its ſelf at its Inſertion a little above the Middle of the *Radius* Externally. Its Name declares its Office, and Figure.

B, The *Pronator Radii Quadratus*, or *Inferior Quadratus*: It Ariſes from the Lower and Inner Part of the *Ulna*, and paſſes Tranſverſly over the Ligament, joining the *Radius* to the *Ulna*, and is Inſerted to the Superior and External Part of the *Radius*. Its Name intimates its Uſe, and Figure.

C, The *Supinator Radii Longus*.

D, The *Supinator Radii Brevis*; left at its Inſertion, which is here truly Expreſt.

E, *Flexor Carpi Radialis*: It Ariſes Fleſhy from the Internal Protuberance of the *Os Humeri*, Cleaves to the *Pronator Radii Teres* A; in Half its Progreſs, becomes Tendinous, and runs under the Annular Ligament, and is Inſerted to the Upper Part of the *Os Metacarpi*; which Suſtains the Fore-finger as here Expreſt.

F, The Little Finger.

G, The Firſt Bone of the Thumb made bare.

H, The *Adductor Pollicis ad Dorſum Manus*, and *Abductor Judicis* Rais'd both together.

I, K, The *Abductor Minimi Digiti*: This we have often ſeen, as its here Repreſented, Divided into Two, and ſometimes Three Diſtinct Muſcles, and each of a differing Order of Fibres: It Ariſes Firſt from the *Ligamentum Tranſverſale*, and Fourth Bone of the *Carpus*; Secondly from the Third Bone of the *Carpus*; Thirdly and Laſtly from the Superior Part of the Subjacent *Os Metacarpi*: The Two Firſt, Terminate at the Superior Part of the Firſt Bone of the Little Finger Forwards: The Latter Ends at the ſame Part of the ſaid Bone Internally and Laterally.

L, The *Flexor Pollicis Longus*: This we have Obſerv'd to have a Twofold Beginning; the Firſt and Superior of which is Sharp, but ſoon Grows Fleſhy at the Internal Protuberance of the *Os Humeri*, between the *Perforatus* and *Perforans*: This Fleſhy Body becoming Tendinous, again joins with the Middle Tendon of its other Large Head. The Second and Inferior Origin of this Muſcle is that Part of it commonly Deſcrib'd and here Figur'd. It Ariſes with a Double Order of Fleſhy Fibres from immediately below the Superior Part of the *Radius*, which Unite in a Middle Line or Tendon, not unlike the *Fibrillæ* of a Feather joining to their *Stamina*; and before it paſſes over the Articulation of the *Carpus*, and under the Tranſverſe Ligament, it Compoſes a ſomewhat Flat Strong Tendon, running in an Interſtice in the *Muſculi Flexor Primi*, and *Secundi Internodii Pollicis*, to its Implantation at the Superior Part of the Third Bone of the Thumb.

M, P, O, *Flexor Primi & Secundi Oſſis Pollicis*: It Ariſes from the *Ligamentum Tranſverſale Carpi*, and Bones of the *Carpus* at the *Baſis* of the *Mons Lunæ*, and *Os Metacarpi* that Suſtains the Middle Finger, and is Inſerted to the *Oſſa Seſamoidea* of the Second Internode, and partly to the Firſt Bone of the Thumb. Its Actions are Various according to the Diverſity of its *Series* of Fibres. So it Bends the Firſt and Second Bones of the Thumb either Directly or Obliquely towards the *Carpus* and *Vola Manus*.

N, N, *&c.* The *Abductor* and Part of the *Flexor Secundi Internodii Pollicis* Rais'd together.

Q, The *Ulnaris Flexor Carpi*: This like the *Radialis* derives its Origin from the Internal Protuberance of the *Os Humeri*, as alſo from the Superior and External Part of the *Ulna*, and is partly Inſerted in ſome Subjects to the Fourth Bone of the *Carpus*; but moſt commonly it paſſes farther on, and runs under the Tranſverſe Ligament, and is Implanted to the Upper Part of the *Os Metacarpis* that Suſtains the Little Finger. Its Name denotes its Imployment.

R, The *Biceps* left at its Inſertion to the *Radius*.

S, The *Brachiæus Internus*.

T, The Internal Tubercle of the *Os Humeri*.

V, The *Ulna* made bare.

W, The *Radius*.

X, The Ligament between the *Ulna* and *Radius*.

THE

SIXTY-NINTH TABLE.

REPRESENTS the External Muſcles lying on the Cubit, imploy'd in Extending the Fingers, Thumb and *Carpus*.

The Skin with the Parts annex'd, Rais'd.

B, The Elbow, which *Bidloo* Erroneouſly calls the External *Apophyſis* of the *Os Humeri*.

C, The External Protuberance of the *Os Humeri*, which *Bidloo* (in like Manner) calls the Internal *Apophyſis* of that Bone.

D, F, The *Radialis Extenſor Carpi*: This has Two Beginnings, and does indeed repreſent Two diſtinct Muſcles; The Uppermoſt (F) ariſes immediately above the External Protuberance of the *Os Humeri*, below the *Supinator Radii Longus*; The other Beginning is beneath the former, either from the *Apex* of the Extuberance of the *Os Humeri*, or Superiour Part of the *Radius*. Both its Tendons, marching under the *Extenſores Pollicis*, run under the Annular Ligament, and are Inſerted to the Superiour Part of the *Oſſa Metacarpi* of the Fore and Middle Fingers. *Vid. Tab.* 71. F, I.

E, The *Extenſor Carpi Ulnaris*: This Ariſes from the External Protuberance of the *Os Humeri*, as alſo from the Upper Part of the *Ulna*, and is Inſerted to the Metacarpal Bone of the Little Finger. If this and the *Ulnaris Flexor*, Act, they move the Hand Sideways towards the *Ulna*; and in like Manner, if the *Radialis Flexor* and *Extenſor*, Act, they move it towards the *Radius*.

G, *Extenſor Digitorum Communis*, by ſome call'd *Cnemodactilius*; It ſprings from the Outward Extuberance of the *Os Humeri* between the *Extenſores Carpi*, and its Tendons paſs under the Annular Ligaments between the Lower Parts of the *Ulna* and *Radius*, marching ſeparately over the Back of the Hand, do tranſmit Tendinous Filaments to each other, before they paſs the Firſt Internodes of each Finger, and are Inſerted to the Firſt, Second, and Third Bones of the Fore, Middle and Third Fingers. There being no Force requir'd in Extending the Fingers, we need not wonder that the Muſcles imploy'd in that Office are no larger in Proportion to their Antagoniſts.

H, The Extending Muſcles of the Thumb, which are diſtinctly Expreſt in the following Tables.

I, Part of the Tendon of the *Muſculus Indicator*.

K *Inferior*, *Abductor Minimi Digiti*.

K *Superior*, The Lower End of the *Ulna*, next the *Carpus* B, its Upper Part call'd *Olecranum*.

L, The Annular Ligament.

M, *Extenſor Minimi Digiti*, Deſcrib'd in the following Table.

N, Part of the *Ulnaris Flexor*.

O, The *Anconæus*: It Ariſes Fleſhy from the Inferior and Back Part of the *Os Humeri*, and growing Thicker as it Marches between the Superior Ends of the *Ulna* and *Radius*, is Inſerted to the lateral Part of the *Ulna*, a Thumbs Length below the *Olecranum*, or Elbow. This Aſſiſts in Extending the Cubit.

P, Part of the *Supinator Radii Longus*: This Ariſes Broad and Fleſhy from the External Part of the *Os Humeri*, Three Finger's Breadth below the Termination of the *Deltoides*; and Deſcending Obliquely, it gradually leſſens its ſelf, and makes a Flat, Broad Tendon, which likewiſe grows Narrower till it's Inſerted to the External and Inferior Part of the *Radius*, near the *Carpus*. *Vid. Tab.* 68. C.

Q, Part of the *Gemellus*, which is ſometimes continuous with the *Anconæus*.

R, Part of the *Brachiæus Internus*.

S, Part of the *Biceps Cubiti*.

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THE

SEVENTIETH TABLE.

DIVERS Muſcles which Extend the *Carpus*, Fingers, and Thumb; ſomewhat Separated from each other and Rais'd.

A, The Firſt Internode of the Fore-Finger.

B, The Firſt Internode of the Little-Finger.

C *Inferior*, The Second Internode or Bone of the Thumb.

C *Superior*, The *Muſculus Extenſor Tertii Internodii Pollicis*: This has a Broad partly Fleſhy Origination from the *Ulna*, immediately below the Beginning of the *Extenſor Primi Internodii*, or between it and the *Judicator*, as alſo from the Ligament between the laſt nam'd Bone and *Radius*, whence Deſcending Obliquely becomes Tendinous, as it Marches in a Proper *Sinus* on the Inferior *Appendix* of the *Radius*, wherein it's Enclos'd by an Annular Ligament, paſſing over the Two Tendons of the *Radiæus Extenſor*, to its Implantation at the Superior Part of the Third Bone of the Thumb.

D D, The *Extenſor Digitorum Communis*.

E F, *&c.* Its Tendons paſſing over the Firſt and Second Joints of the Fingers, here ſupported with a Pen.

G G, The *Radialis Extenſor* ſtretch'd out with a Pair of Compaſſes.

H H, The *Ulnaris Extenſor*.

I, The *Anconæus*.

K, The *Extenſor Minimi Digiti Proprius*: This Ariſes partly Tendinous at the Extremity of the External Protuberance of the *Os Humeri*, and partly Fleſhy from the Superior Part of the *Ulna*, between the *Extenſor Communis Digitorum*, and *Ulnaris Extenſor*; and becoming Tendinous as it paſſes under the *Ligamentum Annulare* at the *Carpus*, where it is Divided into Two, ſometimes Three Tendons, which are again United near their Inſertions to the Firſt, Second, and Third Bones of the Little Finger.

L, Part of the *Ulnaris Flexor*.

M, The Upper *Epiphyſis* of the *Ulna*.

N, The *Muſculus Judicator*, or *Extenſor Judicis Proprius*: This Ariſes Fleſhy from the External Part of the *Ulna* next the *Radius*, immediately below the *Extenſores Pollicis*, and in its Oblique Deſcent becomes Tendinous, Running under the Annular Ligament on a *Sinus*, in the Lower Part of the *Radius*, and paſſes over the *Os Metacarpi Judicis*, joins with the Tendon of the *Extenſor Communis Digitorum*, and is Inſerted with it.

O O, The *Extenſores Secundi & Tertii Internodii Pollicis*.

P, The Lower Part of the *Ulna*.

Q Q Q, The *Inter-Oſſei*.

R, The *Abductor Minimi Digiti*.

S, The *Adductor Pollicis ad Dorſum Manus*.

THE

SEVENTY-FIRST TABLE.

SHEWS the Muſcles Employ'd in Extending the *Carpus*, and Fingers, Rais'd, and left at their Inſertions.

A, The *Radius* made bare.

B, The *Ulna* made bare.

C, The Upper End of the *Radius*, Articulated with the *Os Humeri*.

D, The Ligament joining the *Ulna* and *Radius* together.

E, The *Muſculus Ulnaris Extenſor*.

F, I, c c, *Radialis Extenſor*: I, by *Bidloo* is Erroneouſly call'd *Extenſor Judicis*.

G, *Supinator Radii Brevis*: The Origin of this Muſcle is here well Expreſt and its Inſertion, *Tab.* 68. D.

H, Part of the *Extenſor Digitorum Communis*.

K, *Extenſor Minimi Digiti Proprius*.

L Superior, *Extenſor Tertii Internodii Pollicis*.

M M, The Bones of the *Carpus*.

N N N, The *Oſſa Metacarpi*.

O O, *Extenſores Primi & Secundi Internodii Pollicis*, which derive their Originations from the *Ulna*, like the *Extenſor Tertii Internodii*, and are Inſerted to the reſpective Bones of the Thumb.

P, Part of the *Extenſor Communis Digitorum*, together with the *Judicator*.

Q, The Tendinous Origin of the *Ulnaris Flexor*, cut from the *Ulna*.

R, The Ligament Rais'd which Incloſes the *Oſſa Carpi* at their Articulations, with the *Radius*.

S, The *Adductor Pollicis ad Dorſum Manus*: It Ariſes from the Lower Part of the *Os Metacarpi* of the Fore-finger, and Deſcends Obliquely to its Broad Termination at the Superior Part of the Firſt Bone of the Thumb.

T, The *Abductor Minimi Digiti*.

V V V, The *Inter-Oſſei*.

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THE SEVENTY-SECOND TABLE.

AS the Arm, Cubit, and Hand are comprehended under the Title of the Whole Hand; ſo the Thigh, Leg and Foot, are in common call'd, the Foot. The Bones of thoſe Parts are Repreſented, *Tab.* 103, 104, 105. where we ſhall ſpeak of the particular Denominations of the Parts laſt mention'd: Our Buſineſs at preſent being to Explain the Muſcles which move the Bones; Firſt of the Muſcles which move the Thigh-Bone. The Skin and Fat of the Buttocks being Rais'd, the Muſcle which Firſt offers its ſelf to View, is the *Glutæus Major*, here Rais'd and laid aſide to ſhew its Inferior Surface (A.) The Superior or External Surface of this Muſcle Appears Compos'd of divers Muſcles, in whoſe *Interſtitia* the Fat is Inſerted, and requires an Artificial Management of the Knife in freeing the Muſcle of it, ſo as to leave no Part of the Fat behind, nor Wound the Fleſhy Fibres of the Muſcle.

A, B B, C, The *Glutæus Major* Rais'd and Turn'd Downward. This Muſcle is not well Deſcrib'd by *Anatomiſts*, they only mentioning its Fleſhy Part here Expreſt; beſides which, it has a Large Broad Tendinous Part, Springing from the Whole External Margin of the Spine of the *Os Ilium* (O O) next the *Muſculus Communis* of the *Membranoſus*, whence Marching over the External Part of the *Glutæus Medius* (D); at the Great *Trochanter* (E E), it meets with the Fleſhy Part of this Muſcle, Ariſing from the Poſterior Part of the Spine of the *Os Ilium*, hindermoſt Part of the *Sacrum* Laterally, and *Os Coccygis*, and Cleaving to the Broad Ligament that's Extended between the Two laſt mention'd Bones and Tubercle of the *Os Iſchium*; its Fleſhy Fibres Deſcend Diſgregately in an almoſt Semicircular Manner, and become Tendinous as they approach the Great *Trochanter* where it's United with its Firſt Deſcrib'd Tendinous Beginning, which together Deſcending over the Great *Trochanter*, joins with the Tendon of the *Membranoſus* (of which hereafter,) and proceeds to Frame a Large, Thick, Strong Tendon (C,) Inſerted to the *Lineæ Aſperæ* on the Back of the *Os Femoris*, near Four Fingers Breadth below the Great *Rotator*.

The Firſt Deſcrib'd Tendinous Origin of this Muſcle, do's not only ſerve to ſupport its Fleſhy Body, but its Fibres Extending themſelves, Interſect thoſe of the *Membranoſus* as they Cover all the Muſcles of the *Tibia*, do more Adequately Include thoſe Muſcles, and Corroborate them in their Actions; as we have elſewhere Obſerv'd of the Muſcles of the Cubit and Fingers. When this Muſcle Acts, it draws the Thigh directly Backwards.

I was lately Conſulted in the Caſe of a Fiſtulous Ulcer a little above the Great *Trochanter*; the *Sinus* tended Upwards, and was at leaſt Two Inches Deep from the Surface of the Skin, and about Three Inches in Length: I could Diſcover the Bottom of the *Sinus* to be very hard like a Cartilage; nor was it at all ſenſible to the Touch of the Probe, as the Patient Inform'd me; but on the contrary, told me, *I than ſeem'd to Grate againſt the Bone.* The *Sinus* had been divers times Open'd, and the hard Body at the Bottom of it laid bare, but the Wound could not be Cicatric'd: I Open'd it again, and afterwards cut out the hard Cartilaginous Body which Cover'd the External Part of the *Glutæus Medius*; the Wound afterwards Incarn'd, and was Cur'd in a few Days. This Preternatural hard Body was Fram'd in the Firſt Deſcrib'd Tendinous Part of the *Glutæus Major*, and the Blood-Veſſels would not Spring from it to afford Incarnation; nor would common Eſcharoticks Act on it, wherefore it continued to lie Bare; but after cutting it out thro' the Blood-Veſſels from the Subjacent Muſcle, the *Glutæus Medius* Sprung up, and join'd with thoſe of the Membranes under the Skin, by which means a Confirm'd *Cicatrice* was made. By this we may be Inform'd how Uſeful Anatomy is in Surgery.

The like Caſe may happen on the Tendinous Expanſion of the Inferior Part of the *Membranoſus*, on the Muſcles of the *Tibia* and *Tarſus*, where dividing it only according to its Length may be ſufficient.

D, E E, F, *Glutæus Medius*: This lies chiefly under the Tendinous Beginning of the *Maximus*, Ariſing Fleſhy from almoſt the Whole External Part of the Spine of the *Os Ilium*, whence Deſcending becomes Thicker and Fleſhy, and is Inſerted (in a Semicircular Manner E E) by a Short Strong Tendon, to the Superior and External Part of the Great *Trochanter*.

This Muſcle is not only Employ'd in Extending the Thigh, but is chiefly Serviceable in Turning it Inwards; and this Action of it will Manifeſt it ſelf, if in Time of Diſſection you give the Thigh that Motion as it lies on the Table; you may then Obſerve the Fore-part of this Muſcle Notably Relaxt; and in Living Perſons when the Thigh is turn'd Inwards, you may ſee the Fore-part of this Muſcle Tumified, which ought to be taken Notice of by Painters; or, if in Performing that Action with your own Thigh you lay your Thumb on this Muſcle, you may eaſily Feel it move under the Skin: Beſides theſe Actions, it's alſo Employ'd in Stradling or Pulling the Thighs and Legs from each other; it Co-operating with the *Muſculus Membranoſus* in that Action.

G, Part of the *Triceps*.
H, The *Pyriformis* or *Iliacus Externus*.
I I, Part of the *Marſupialis*.
K, The Great Crural Nerve.
L, The *Appendix* of the *Os Iſchium*, whence the Muſcles Bending the *Tibia* and *Muſculus Quadratus* do Spring.
M, A Ligament Protended from the *Os Sacrum* to the Tubercle of the *Iſchium*, or *Os Coxendicis*.
N, Part of the *Os Sacrum*.
O O, The Spine of the *Os Ilium*.
P, The Great *Trochanter*.
Q, Part of the *Vaſtus Externus*.
R, The Upper Head of the *Biceps Femoris*.
S, The Beginning of the *Seminervoſus*.

THE

SEVENTY-THIRD TABLE.

DIVERS Muſcles of the Thigh, &c.

A, The *Glutæus Major*.

B, The *Medius*; both being Rais'd and left at their Inſertions.

C, The *Glutæus Minor in Situ*: It has a Semicircular Broad Beginning from the *Dorſum Oſſis Ilii*, whence its Fleſhy Fibres Deſcend to their partly Fleſhy and partly Tendinous Inſertion, at the Superior Part of the Root of the Great *Trochanter*. This Performs the ſame Office with the *Medius*, mention'd in the Deſcription of the preceding Table.

D, F, G, I, The *Pyriformis*, by ſome call'd *Iliacus Externus*, by others *Quadrageminus Primus*: It Ariſes Round and Fleſhy from the Inferior and Internal Part of the *Os Sacrum*, within the *Pelvis* of the *Abdomen*, Deſcending from thence Obliquely in the Great *Sinus* of the *Os Ilium* (Tab. 99. Fig. 2. F) above the Acute Proceſs of the *Iſchium* (*Ibid.* G,) and joins with the *Glutæus Medius* before it's Inſerted to the Upper Part of the Root of the Great *Trochanter*. This moves the Thigh ſomewhat Upwards and Turns it Outward.

E, The *Os Sacrum*.

H, That Part of the *Marſupialis*, call'd the *Marſupium*.

K, The Tubercle of the *Os Iſchium*.

L, The Back-part of the *Os Ilium*.

M, The Great *Trochanter*.

N, The *Muſculus Quadratus Femoris*: It Ariſes Broad and Fleſhy from the *Epiphyſis* of the *Os Iſchium*, and paſſes Tranſverſly of an equal Breadth and Thickneſs to its partly Fleſhy and partly Tendinous Implantation, at the Poſterior Part of the *Os Femoris*, below the Great *Trochanter*: This turns the Thigh Outwards.

O, Divers Muſcles of the *Tibia* near their Origin.


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THE

SEVENTY-FOURTH TABLE.

SEVERAL Muſcles Imploy'd in Moving the *Os Femoris*, Rais'd from their Originations, and left at their Inſertions.

A, The *Glutæus Major*, ſcarcely Appearing under the *Medius*.

B, The *Glutæus Medius*, } Free'd from their Originations, and left at their

C, And *Minor*, } Inſertions.

D, The *Iliacus Externus*, or *Pyriformis* hanging at its Inſertion.

E, Part of the *Triceps*.

F, G, The *Marſupialis* or *Burſalis*, by ſome call'd *Obturator Internus*: It Ariſes Broad and Fleſhy from the *Os Ilium*, *Iſchium*, *Pubis*, and Ligament that's Extended in the Great *Foramen* of the Two laſt nam'd Bones Internally; whence paſſing Tranſverſly, it's Inflected on the *Sinus* of the *Iſchium* N; on each Side of which, namely the Acute O, and Obtuſe Proceſs P, Ariſes its Second Fleſhy Body, call'd *Marſupium* G; which, Covering the Tendons deriv'd from its former Origin, Deſcends Obliquely with them to their Inſertion at the Superior Part of the Root of the Great *Trochanter*.

When this Muſcle Acts, the Great *Trochanter* is directed towards that Part of the *Iſchium* N, whereon its Tendons are Inflected, not unlike a Pulley; by which the *Os Femoris* is turn'd Outwards.

H, The *Obturator Exteruus* cut from its Origin at the Great *Foramen* (R) of the *Os Iſchium*; its Name is deriv'd from its Situation, its call'd *Rotator Femoris Extrorſum* from its Uſe; it has a Large Fleſhy Beginning from the External Parts of the *Os Iſchium*, *Pubis*, and Membrane that Covers the *Foramen* Externally, (oppoſite to the Origin of the *Marſupialis*) paſſing Tranſverſly Backwards, Leſſens its ſelf, and Grows Tendinous at its Implantation to the Root of the Great *Trochanter*.

I, The Head of the *Os Femoris* lying out of the *Acetabulum*, after the *Ligamentum Latum* is cut off.

k, The Round Ligament of the *Os Femoris* which is Faſten'd to the Inferior Part or Margin of the *Acetabulum*; whereby the Great Atrition of the Superior Part of the *Acetabulum*, with the Head of the *Os Femoris*, is prevented in Walking, Running, and the like Actions.

l, The Mucilaginous Gland Entertain'd in a particular Depreſſure in the Bottom and Lower Part of the *Acetabulum*; whereby the too Great and often Compreſſure of the Mucilage in Ordinary Motions of the Thigh, is Prevented.

m, Some Remains of the Mucilaginous Glands on the Neck of the *Os Femoris*, near the Conjunction of the *Ligamentum Latum*; which is here taken off, to ſhew the Head of the Thigh-Bone and *Acetabulum* of the *Os Coxendicis*.

K, The *Os Ilium*.

L, The *Os Sacrum*.

M, The *Coccygis*.

N, The *Sinus* of the *Os Iſchium* in which the Tendons of the *Marſupialis* paſs.

O, An Acute Proceſs of the *Iſchium*.

P, The *Appendix* of the *Iſchium* whence Springs the Bending Muſcles of the *Tibia*.

Q, The Lower Margin of the *Os Pubis*.

R, The Great *Foramen* of the *Os Iſchium* and *Pubis*.

THE

SEVENTY-FIFTH TABLE.

EXPRESSES divers Muſcles of the *Tibia*, and ſome of thoſe of the Thigh.

A, B, C, The *Sartorius*, or *Faſcialis Longus, ſeu Longiſſimus Femoris*: It ariſes Sharp and Fleſhy from the Fore-part of the Spine of the *Os Ilium*, cloſe by the *Muſculus Communis* of the *Membranoſus*, and Deſcending Obliquely Inwards on the *Rectus*, and *Vaſtus Internus*, and over Part of the *Triceps* of an unequal Breadth and Thickneſs; it meets with the *Gracilis* below the Middle of the Thigh Internally, and Accompanies it in its Paſſage over the Internal and Inferior Head of the Thigh-bone; where it becomes Tendinous as it paſſes under the Strict Incloſure of the *Faſcia Lata*, and is Inſerted Four Fingers Breadth below the Superior Part of the *Tibia* Internally; it's Employ'd in moving the Thigh and *Tibia* Upwards, ſomewhat Forewards, and Inwards; in which Actions, the Upper-part of this Muſcle Appears thro' the Skin, which ought to be obſerv'd by *Painters*, and *Sculptors*.

D, E, F, The *Gracilis*: It Ariſes ſomewhat Broad, partly Tendinous and partly Fleſhy from the *Os Pubis* Internally, between the Two Firſt Heads of the *Triceps*, and in its ſtraight Deſcent on the Inſide of the Thigh, Leſſens it ſelf, becoming Tendinous a little above the Tendon of the laſt Deſcrib'd Muſcle, and is ſo Inſerted immediately beneath it to the *Tibia*.

It Aſſiſts the Flexors of the *Tibia*.

G, The *Rectus*: It Ariſes Fleſhy from a Prominence of the *Os Ilium*, between the Fore-part of its Spine and *Acetabulum*, (Tab. 99. Fig. 1. I,) thence Deſcends directly between the *Vaſtus Externus*, and *Internus*, over the *Crureus*: Its Fibres Externally Deſcend from a Middle Line Obliquely Laterally; Internally they paſs according to its Length, and become entirely Tendinous Four Fingers Breadth above the *Patella*, where it's United with the Tendons of the Two *Vaſti* and *Crureus*, and is Inſerted with them to the *Tibia*.

It Aſſiſts in Extending the Leg, as alſo in drawing the Thigh and Leg Upwards.

H, The *Vaſtus Internus*: It Ariſes partly Tendinous and partly Fleſhy, at the *Linea Aſpera* on the Back-part of the *Os Femoris*, from immediately below the Leſſer *Trochanter*, to Three Fingers Breadth above the Inferior *Appendix* of that Bone Internally and Laterally; whence its Fleſhy Fibres Deſcend in an Oblique and almoſt Semicircular Manner, and on a ſudden becoming Tendinous, joins with the Tendon of the *Rectus*, *Vaſtus Externus*, and *Crureus*, and is Inſerted to a Prominence on the Upper and Fore-part of the *Tibia* after joining with the *Patella*. Its Office is the ſame with the laſt nam'd Muſcles.

I, The *Vaſtus Externus*: Its Origin Externally is Tendinous, Internally Fleſhy from the Lower-part of the Great *Trochanter*, and Exterior Part of the *Linea Aſpera* of the *Os Femoris*; whence its Fibres Deſcend Obliquely Forwards, and on the contrary become Outwardly Fleſhy and Tendinous Internally, and immediately becomes perfectly Tendinous, joining with the Tendons of the Two laſt Treated of Muſcles, and is Inſerted with them (after joining with the *Rotula*) to the *Tibia*, as is above mention'd.

K K, Parts of the *Triceps*.

L, The *Pectineus*, by ſome call'd *Lividus* and *Flexor Femoris*; it has a Thick Broad Fleſhy Origin from the External Part of the *Os Pectinis*, or *Pubis*, between the *Muſculus Lumbalis*, together with the *Iliacus Internus*, and Second Head of the *Triceps*; whence Deſcending Obliquely Backwards, becomes a Flat Strong Tendon near its Implantation to the Aſperity, on the Poſterior Part of the *Os Femoris*, immediately below the Leſſer *Trochanter*, and the Termination of the *Pſoas*. This Acting together with the *Pſoas Magnus*, and *Iliacus Internus*, do not only Aſſiſt thoſe Muſcles in drawing the *Os Femoris* Upwards, but by its Oblique Curve Deſcent from its Origin to its Inſertion: It Directs the Thigh ſomewhat Outwards, which is a provident Contrivance in Nature, leaſt in Walking, the Thigh-bones by their Oblique Poſition ſhould be Incident to turn Inwards; wherefore this Muſcle is more particularly Employ'd in Directing the whole Foot, *viz.* the Thigh, Leg, and Foot Outwards, in a more Graceful Step.

M, The *Pſoas* together with the *Iliacus Internus*, near their Inſertions.

N, The *Os Pubis*.

T. 75.

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THE

SEVENTY-SIXTH TABLE.

DIVERS Muſcles lying on the Fore-part of the Thigh.

A, The *Muſculus Communis* of the *Membranoſus.*

B, Part of its Tendinous Expanſion Rais'd and Pinn'd out; it's call'd *Membranoſus* and *Faſcia Lata*, from its large Membranous Expanſion, Comprehending all the Muſcles of the *Tibia*, together with Part of thoſe of the Thigh: It hath an Acute Fleſhy Beginning from the Fore-part of the Spine of the *Os Ilium*, between the Origination of the *Sartorius*, and Firſt Deſcrib'd Tendinous Beginning of the *Glutæus Magnus*, being Dilated to a Fleſhy Belly after an Oblique Deſcent, it becomes Tendinous Four Fingers Breadth below the Great *Trochanter*; whence it Deſcends Directly over the *Vaſtus Externus*, to its Proper Termination at the Superior *Appendix* of the *Fibula*; but in its Progreſs thither, it is conjoyn'd with the Tendinous Expanſion of the *Glutæus Magnus*, that Ariſes from the Spine of the *Ilium*, Covering the External Part of the *Glutæus Medius*, and all the External Muſcles of the *Tibia*, as well as thoſe of the Thigh-bone, and Deſcending over the *Patella*, Comprehends all the External Muſcles of the *Tarſus* and Toes, and joins with the *Ligamentum Annulare*, which retains the Tendons of the Muſcles of the Toes and Foot: Unleſs it may be ſuppos'd this *Faſcia Lata* ſhould End at the Lower-part of the Thigh-bone, or Superior Parts of the *Tibia* and *Fibula*, and that the laſt Nam'd Bones ſhould give an Origin to the Inferior Part of the *Faſcia*; which ſeems to be Matter more of Controverſie than Uſe. When this Muſcle Acts, it draws the Leg Outwards; its Tendon being join'd with Part of the Tendinous Beginning of the *Glutæus Magnus*, having a differing *Series* of Fibres Interſecting each other, do thereby Compoſe a Strong *Involucrum*, as well Including all the Common Muſcles of the Leg, as Covering the Proper; whereby thoſe Muſcles are Corroborated in their Actions.

C, The *Crureus* or *Femoreus*: Its Origination is Large and Fleſhy on the Fore-part of the Thigh-bone, from between the Greater and Leſſer *Trochanter*, as Appears *Tab.* 79. its Fibres Deſcend directly, and become intirely Tendinous a little below the Upper-part of the Tendon of the *Rectus*, ſoon joining with that Tendon, together with thoſe of the Two *Vaſti*, and Fixing to the *Patella*, is afterwards Implanted to a Prominence at the Superior and Fore-part of the *Tibia*. The Extending Muſcles of the *Tibia* are much Stronger than their Antagoniſts the *Flexors*, as Appears by their Magnitude and Conformation; whether in reſpect to their Variety of *Series* of Fibres in General, or Triple Order of thoſe of the *Rectus* in Particular, and its Incloſure in the *Faſcia Tendinoſa*: Nor is this Conformation without ſome conſiderable End Deſign'd by the Author of Nature; for ſhould not the Legs be Extended with a Force Exceeding the Incumbent Weight, we ſhould be continually liable to an Inflection at the Knees, thro' the Preſſure of the Whole Body; much leſs ſhould we be able to Tranſlate the Body from one Place to another. But the All-wiſe Architect of Humane Bodies has ſo Fram'd theſe Muſcles, as not only to make them Uſeful in Supporting the Whole Body, and rendering them Effectually Serviceable in Walking, Running, and the like: But thro' the great Proportion of Strength of theſe Extending Muſcles of the *Tibia*, they are alſo Capable (upon Inflection at the Knees) by their ſudden Acting to Extend the Legs with ſuch a Force, as to remove the Whole Body from the Place where it ſtood, as in Leaping: In which Action, the Extending Muſcles of the Back, namely the *Sacrolumbales*, *Longiſſimi Dorſi*, &c. and the *Gaſterocnemii* of the Feet do in like Manner Concur in Extending thoſe Parts: A likeneſs of which is Repreſented in a piece of Whale-bone, *Vid. Borell. De Motu Animalium.*

D, Part of the *Sartorius.*

E, The Tendinous Part of the *Gracilis.*

F, A Portion of the *Rectus*, as it Appears hanging down.

G, The *Vaſtus Internus* Rais'd and hanging down.

H, Part of the *Vaſtus Externus* in like Manner Diſſected.

I, The Firſt and Largeſt Head of the *Triceps*, which Ariſes Broad and Fleſhy from the Inferior Edges and External Parts of the *Os Iſchium* and *Pubis*, and Deſcending with an Oblique Order of Fibres to its partly Tendinous and partly Fleſhy Inſertion to the *Linea Aſpera* of the Thigh-bone, immediately below the Implantation of the *Muſculus Quadratus Femoris*; the Lower-part of this Head of the *Triceps* Compoſing a Strong Round Tendon, Inſerted to the Superior Part of the Internal and Lower *Appendix* of the Thigh-bone: The Second Head of this Muſcle Ariſes Tendinous from the *Os Pubis*, but in its Deſcent ſoon becomes Fleſhy, and joins with the Former, near its Inſertion to the Middle Part of the *Linea Aſpera* of the Thigh-bone: The Third and laſt Beginning of the *Triceps*, Springs from the Inferior Part of the *Os Pubis*, between the Origin of the laſt Deſcrib'd Head, and *Pectinæus*; and Deſcending Obliquely, joins with the Firſt Head near its Inſertion to the *Linea Aſpera* of the Thigh-bone, immediately above the Termination of the Second Head. The *Triceps* moves the Thigh Variouſly according to the Diverſity of its Beginnings; ſo the Firſt Deſcrib'd Part of it draws the Thigh-bone Upwards, Inwards, and ſomewhat Backwards; the Second and Third Beginnings of it, pulls the Thigh more Inwards, and Turns it ſomewhat Outwards, as when we put our Legs Acroſs each other.

K, Parts of the *Pſoas*, and *Iliacus Internus.*

L, The *Muſculus Pectinæus.*

M, The *Os Pubis.*

N, The Blood-Veſſels of the Thigh Ti'd.

O, The *Patella* or Knee-pan.

P, The Inferior and Internal Part of the Lower *Appendix* of the Thigh-bone.

Q, Part of the *Tibia.*

THE

SEVENTY-SEVENTH TABLE.

SOME of the Muſcles of the Thigh and Leg Diſſected from their Originations, and left at their Inſertions.

ABC, &c. The *Muſculus Biceps Femoris*: BB, Its Two Heads or Beginnings: C, Its Termination.

D, The *Semimembranoſus*, which in its Proper Situation is partly cover'd with the *Seminervoſus* (E): It has its Tendinous Origin from the Protuberance of the *Os Iſchium*, and compoſing a Broad, Flat Tendon in Half its Progreſs, on the Back-part of the Thigh it becomes a Round Fleſhy Belly, lying under the Long Tendon of the *Seminervoſus*: About the Lower *Appendix* of the Thigh-bone (M), this Muſcle is converted into a Strong Round Tendon, Running in a Channel on that *Appendix*, and is afterwards Inſerted to the Superior and Back-part of the *Tibia*: This Bends the *Tibia*, which Action it Performs the more Advantageouſly by its Lower Tendons, paſſing in a Channel on the Inferior *Appendix* of the Thigh-bone; which, as a Pully not only Directs it in its Office, but renders its Action in Bending the Leg more Vigorous. It muſt be Granted, that if the Tendon of this *Semimembranoſus* had paſt further on, and Terminated with thoſe of the *Seminervoſus*, *Gracilis*, and *Sartorius*, it would have rendred it capable of Performing its Action with Force; but in regard the Number of Tendons here on this Internal Side of the Ham are already Increas'd to Three, the Fourth could not well be admitted without ſome Inconveniency, either in Performing its Office together with the Reſt, or in the Figure of the Part: Beſides it ſeems to be no ſmall Artifice in Nature, as well here in the Leg, as in the Arm, to Furniſh both with Proper Muſcles, which ſhould Gradually Bend them: Thus the Shorter Beginning of the *Biceps Femoris* and the Muſcle now Treated of, are Analogous to the *Brachialis Internus*, *Flexor Cubiti*; and this Contrivance here ſeems the more convenient in reſpect of Walking; in which a moderate Flexion of one of the Legs is only Neceſſary, in Order to its Tranſlation before the other.

E, The *Seminervoſus* or *Semitendinoſus*.

F, The *Glutæus Magnus* Rais'd.

G, Part of the *Glutæus Medius*.

H, The Back-part of the Thigh-bone made bare.

I, The *Vaſtus Externus* partly cover'd with the Tendinous Expanſion of the *Membranoſus*.

K, The Tendon of the *Membranoſus* on the *Vaſtus*.

L, M, The Two Prominencies of the Lower *Appendix* of the Thigh-bone, of which the Internal (M) is furrow'd to receive the Round Tendon of the *Semimembranoſus*.

N, The Trunks of the Blood-Veſſels cut off in the Ham.

O, Part of the Crural Nerve.

PP, The Two Fleſhy Beginnings of the *Gaſterocnemius Externus*.

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THE

SEVENTY-EIGHTH TABLE.

REPRESENTS the Muſcles on the Back-part of the Thigh partly free'd from each other, and left at their Originations and Inſertions.

A, Part of the *Glutæus Major*.

BB, *Biceps Femoris in Situ*: It having Two Beginnings; the Superior and Longeſt of which, Ariſes from the Protuberance of the *Os Iſchium* (G), in its Deſcent becomes Large and Fleſhy, and Leſſening it ſelf, joins with the Inferior and Shorter Head, which Springs partly Fleſhy and partly Tendinous from the *Linea Aſpera* of the *Os Femoris*, immediately below the Termination of the *Glutæus Magnus*; ſoon after theſe Two Heads or Beginnings of this Muſcle are United, it becomes Tendinous as it Deſcends in a Channel on the External Part of the Lower *Appendix* of the *Os Femoris*, and is Implanted to the Superior *Epiphyſis* of the *Fibula*.

Beſides the Office commonly Aſſign'd, this Muſcle together with the *Seminervoſus* and *Semimembranoſus*; it's likewiſe Imploy'd in Turning the Leg together with the Foot, *&c.* Outwards in Sitting with the Leg Bended.

CC, The *Semimembranoſus* remov'd from its Proper Situation.

DD, The *Seminervoſus* in like Manner Rais'd, and left at its Origination and Inſertion: This Ariſes from the ſame Protuberance of the *Os Iſchium* (G), with the Upper Beginning of the *Biceps* and Origin of the *Semimembranoſus* (CC), and Deſcending Obliquely Inward after making a Fleſhy Belly, Compoſes a Round Tendon above the Ham, which Deſcends to its Inſertion with the *Gracilis* and *Sartorius*, below the Upper *Appendix* of the *Tibia* Internally.

E, The Poſterior Part of the Thigh-Bone.

FF, Parts of the *Gaſterocnemius Externus*.

G, The Protuberance of the *Os Iſchium* where the Bending Muſcles of the *Tibia* above-mention'd do Ariſe.

H, Part of the *Triceps*.

I, The Great Crural Nerve.

THE

SEVENTY-NINTH TABLE.

EXPRESSES Parts of ſome Muſcles remaining on the Fore-part of the Thigh-Bone.

A A, The Fore-part of the Thigh-Bone.

B B, Part of the *Crureus* Muſcle Rais'd from the *Os Femoris*.

b b, A Portion of the *Crureus* ſtill remaining on the Thigh-Bone.

C, The Internal Part of the *Patella*, or Knee-pan.

D, The Inſide of the Tendon of all the Extending Muſcles of the *Tibia* United above the *Patella*.

E E, The Mucilaginous Glandules of the Knee: The Situation of theſe Glandules as well as others of this Kind, is ſo Contriv'd in the ſeveral Articulations of Bones to which they belong, as that they are not liable to be Compreſt by the Appoſition of the Bones in their Various Motions: Nor are they Deſtitute of ſuch a Compreſſure as is Neceſſary to Accelerate their Mucilaginous or Slimy Juice, when Lodg'd in their Excretory Tubes. The Tubes or Excretory Ducts of theſe Glands, do not Diſcharge their Contents like thoſe of the *Fauces*, by open Apertures; but are Carri'd beyond the Surface of their Glands, and Frame a *Fimbria* or Fringe-like Appearance, which hangs Looſe or Flaggy in the *Sinus's* of the Articulations: This Contrivance in theſe Excretory Tubes of the Mucilaginous Glands of the Joints, is not only Neceſſary to Defend their Mouths from being Oppreſt by the Mucilage contain'd in the *Sinus's* of the Articulations in its Endeavour to Return again; but the too Plentiful Excretion of this Mucilage is alſo prevented, and ſuch a Quantity only Emitted as is Neceſſary to Lubricate the Articulations in their Reſpective Motions. Hence it Appears as in Violent Repeated Motions of the Bones, there is a greater Expence of the Mucilage, ſo there is a conſtant Supply in Proportion to that Expence.

F, The Head of the Thigh-Bone taken out of the *Acetabulum*, or Cavity of the Hip-Bone.

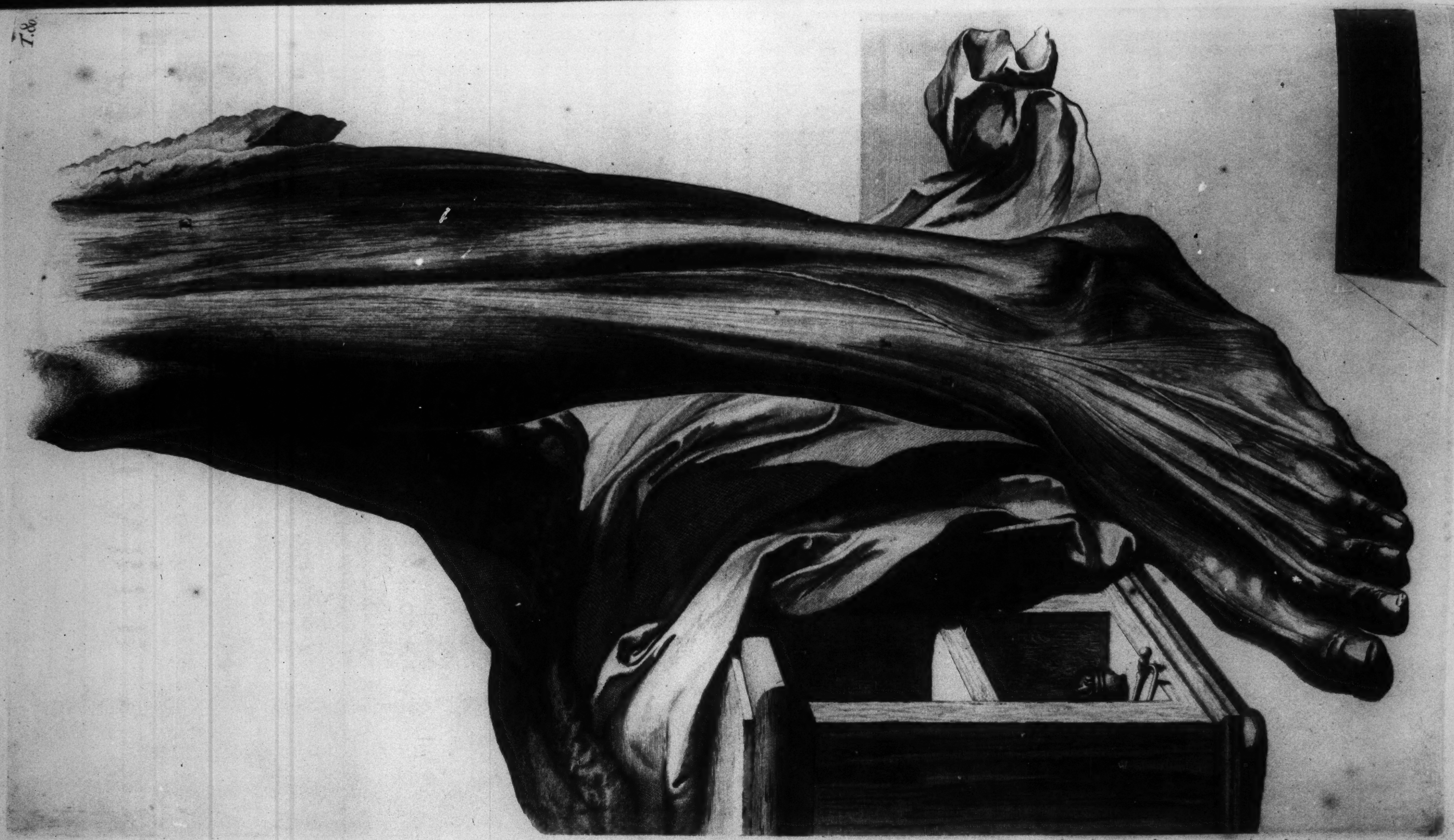
G, The *Ligamentum Latum*, or Broad Ligament of the *Coxendix*, which Involv'd the Articulation of the Thigh-Bone with the Hip, here cut from the Margin of the *Acetabulum*, and left at its Connection to the Neck of the Thigh-Bone.

H, Part of the Great *Trochanter*.

The Muſcles Adjacent to theſe Parts laſt mention'd, are here ſo confuſedly Expreſt, as no Explanation of them can be Aſſerted.

T. 79.

T. 80.



THE

EIGHTIETH TABLE.

THE Muſcles on the Fore-part of the Leg lying under the *Faſcia Lata.*

A, The Upper-part of the *Tibia* next the *Patella* which Compoſes the Knee.

B, The Tendons of the *Muſculi Peronei* in their Progreſs towards their Inſertions, as is Expreſt in the following Table.

C, The Lower *Appendix* of the *Fibula,* call'd *Malleolus Externus.*

D, The *Muſculus Tibialis Anticus in Situ* : *Spigelius* calls it *Muſculus Catenæ,* becauſe when it is Divided, the Patient is Oblig'd to Uſe a Sling to Support the Foot for ſome time. I have more than once ſeen this Muſcle Divided, whether by Ignorantly Mis-applying of Cauſticks on Nodes of the *Tibia,* or in the Caſe of a Fracture of that Bone, and the Patient after ſome Time has Recover'd the compleat Action of Lifting up his Foot, by the *Extenſor Pollicis Pedis,* H: The *Tibialis Anticus* derives its Fleſhy Origin from the Lower-part of the Superior Apendage of the *Tibia* between its Prominence, where the Great Tendon of all the Extending Muſcles of the Leg is Inſerted, and the Origination of the *Muſculus Extenſor Digitorum Pedis Longus ſeu Magnus*; it alſo continues a Diſgregated Fleſhy Origination for near Two Thirds of the Superior Part of the *Tibia* Externally Laterally, next the *Fibula*; which Compoſing a Fleſhy Belly, Leſſens its ſelf in Half its Progreſs, and Growing into a Strong and ſomewhat Round Tendon, Deſcends Obliquely over the Inferior Part of the *Tibia,* and under the Annular Ligament, and is Inſerted to the Superior and Internal Part of the *Os Metarſi Pollicis.*

This pulls the Foot Upwards and Forwards, Directly.

E, The *Peronæus Longus.*

F, The *Extenſor Digitorum Pedis Longus.*

G, Part of the Tendons of the *Extenſor Digitorum Brevis.*

H, The Tendon of the *Muſculus Extenſor Pollicis Longus.*

I, Part of the *Gaſterocnemius Externus.*

N.B. *That the Muſcles are Expreſt in this Figure under the* Faſcia Lata; *which like a Bandage retains their Tendons in their Proper Situation, in Order to Perform their Offices in Extending the Toes and drawing the Foot Upwards. In the following Figure the* Faſcia Lata *is taken off, and the Muſcles are Repreſented more Diſtinct, being partly Separated, and their Tendons Rais'd.*

Part of the Gaſterocnemius Internus *is Expreſt in this Figure between* E, and I.

THE

EIGHTY-FIRST TABLE.

DIVERS Muſcles on the Fore-part of the Leg, partly Divided from each other.

A, The Superior *Apophyſis* of the *Tibia*, to which the Tendons of the Extending Muſcles (after joining with the *Patella*) are Inſerted.

B, The Upper *Appendix* of the *Fibula*.

C, Part of the *Tibia*.

D, The Heel or *Os Calcis*.

E, The *Muſculus Tibialis Anticus*.

F, The *Extenſor Digitorum Magnus* or *Longus*, it being the Largeſt and Longeſt Muſcle that Extends the Toes: This hath an Acute Fleſhy Beginning Externally from the Inferior Part of the Upper *Appendix* of the *Tibia* next the *Fibula*; as alſo a Long Fleſhy one from the Superior Part of the laſt Nam'd Bone, and Leſſening it ſelf in Half its Progreſs on the Leg, it joins with a Second Broad, Diſgregated Fleſhy Beginning, continued for near Half the Inferior Part of the *Fibula*; where Deſcending under the *Ligamentum Annulare* of the *Talus*, it is Divided into Five Tendons, Four of which are Inſerted to the Third Bones of all the Leſſer Toes; but the Fifth is Implanted on the Superior Part of the *Os Metatarſi* of the Little Toe; which Part of it, *Veſalius* makes his Ninth Muſcle belonging to the Foot.

G, The *Extenſor Digitorum Brevis*: It Ariſeth Fleſhy from the External and Fore-part of the *Os Calcis*, ſoon Dilating it ſelf to a Fleſhy Belly, which being Divided into Four Fleſhy Portions, become ſo many Tendons, paſſing over the Upper-part of the Foot, make Acute Angles with the Tendons of the Former Muſcle, as they run over the Firſt Internode of each Leſſer Toe, to their Inſertions at the Superior Part of their Second Internodes.

H, The *Extenſor Pollicis Pedis Longus & Magnus*: It being the Longeſt and Largeſt Extender of the Great Toe; Its Beginning is Large and Fleſhy on the Fore-part of the *Fibula*, from immediately below its Superior *Appendix*, to Four Finger's Breadth above its Inferior one; and Deſcending under the *Ligamentum Annulare* of the *Tarſus*, between the Tendon of the *Tibialis Anticus*, and the Tendons of the *Extenſor Pedis Longus*, Marching along the Superior Part of the Foot; it's Inſerted to the Upper-part of the Second Bone of the Great Toe; its Name declares its Uſe.

I, The *Peroneus Primus ſeu Magnus in Situ*: In the following Table it's Rais'd from its Origin, and left at its Inſertion.

K, The Skin on the Bottom of the Foot, call'd *Planta Pedis*, taken off.

L L, A Style or Bodkin Supporting the Tendons of the *Extenſor Digitorum Longus*.

M, The Lower *Appendix* of the *Fibula*, call'd *Malleolus Externus*.

N, Part of the Bone, call'd *Talus* and *Aſtragalus* made bare, ſo that its Cartilaginous Surface that is Articulated with the Inferior Part of the *Tibia* and *Fibula*, may be ſeen.

O, The Mucilaginous Gland of the *Tarſus* Entertain'd in the Large Cavity or *Interſtitium*, Fram'd between the *Talus* and Oblong Tubercle of the *Os Calcis*; the Uſe of which Cavity and *Mucus*, is taken Notice of by *Realdus Columbus* Lib. I. Cap. xxxii. to Moiſten the Articulation of the Bones, leaſt they become Dry by their frequent Motion.

P, The Tendon of the *Peroneus Longus* Marching behind the *Malleolus Externus*, in its Way to its Inſertion in the Bottom of the Foot.

Q, Part of the Tendon of the *Peroneus Secundus*.

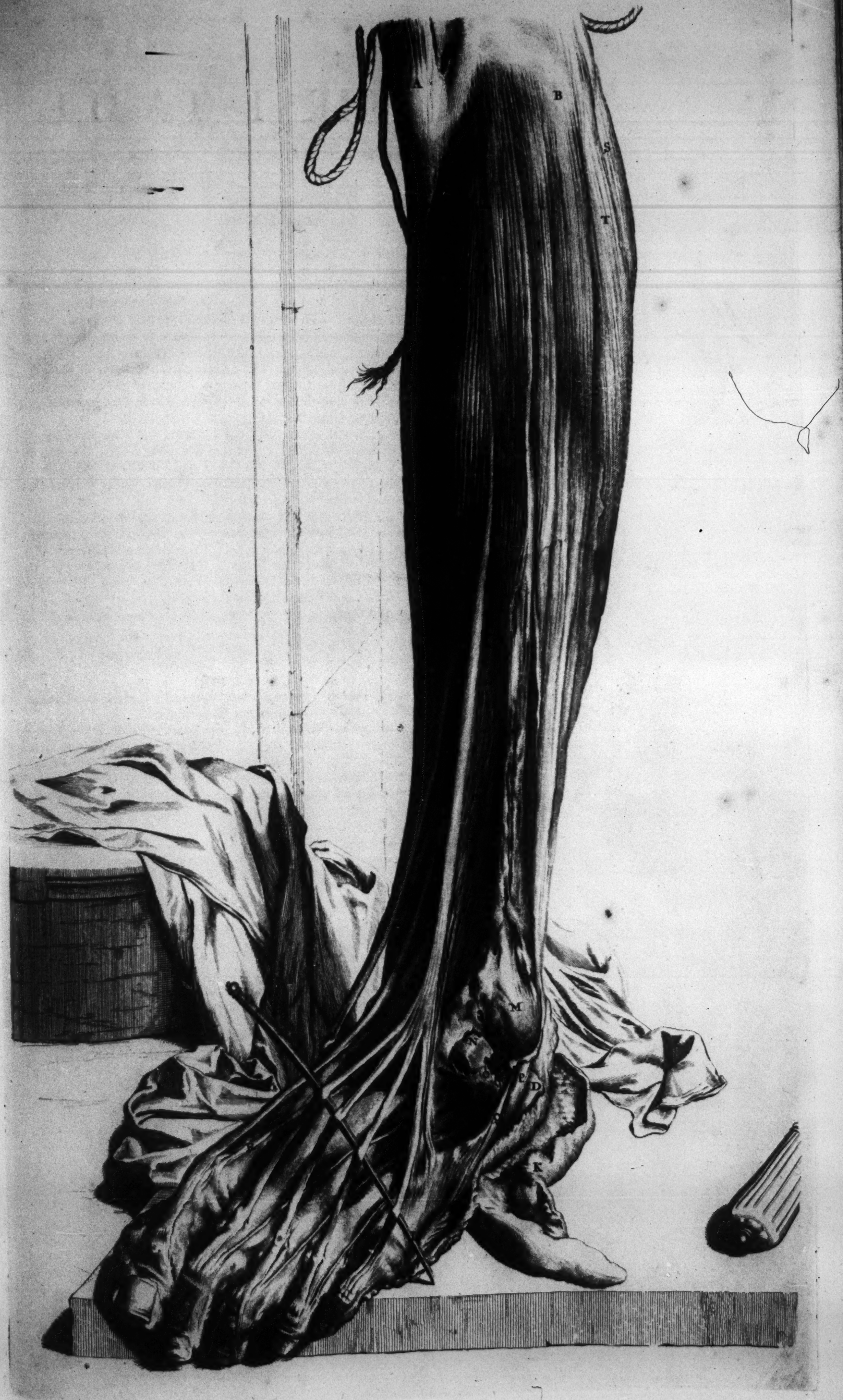
R, The *Extenſor Pollicis Brevis in Situ*.

S, Part of the *Gaſterocnemius Externus*.

T, Part of the *Internus*.

N. B. *That the* Faſcia Membranoſa *which Helps to Compoſe the Annular Ligament, between the Two* Malleoli *and Upper-part of the Foot or* Tarſus, *commonly call'd the Inſtep, is here taken off from its Continuance near Half the Lower-part of the* Tibia, *that of the Upper-part of the Leg or* Tibia *remaining on, as is well Expreſt in this Figure.*

THE


A
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THE

EIGHTY-SECOND TABLE.

SHEWS the Extending Muſcles of the Toes, together with divers Imploy'd in the Motion of the Foot Diſſected from their Originals, and left at their Tendinous Inſertions.

A, The Inſide of the *Tibialis Anticus* free'd from the *Tibia*.

B, The *Peroneus Secundus*, by ſome call'd *Semifibulæus*: It has an Acute Fleſhy Beginning from above the Middle of the External Part of the *Fibula*, under the Fleſhy Belly of the *Peroneus Longus*, continuing to derive a Diſgregated Fleſhy Beginning from the Poſterior Sharp Edge of the *Fibula*, Compoſing a Fleſhy Belly; it Grows Tendinous as it paſſes behind the *Malleolus Externus*, under the Tendon of the *Peroneus Longus*, and is Inſerted to the Superior and External Part of the *Os Metatarſi* of the Little Toe.

This draws the Foot Outwards.

C, The *Peroneus Primus* or *Longus*, ſo call'd becauſe it is the Firſt that offers its ſelf to View, and the Longeſt Muſcle plac'd on the *Os Perone* or *Fibula*; it Ariſes Externally Tendinous, and Internally Fleſhy, from above Half the Superior Part of the *Fibula*, Deſcending ſomewhat Backwards, Compoſes a Strong Flat Tendon, which becomes ſomewhat Round as it Marches in a Channel on the *Malleolus Externus*; whence it's Inflected Forwards (*Tab.* 81. P,) Accompaning the Tendon of the *Peroneus Secundus* to its Inſertion (*Tab. Ibid.* Q,); where the Tendon of this Muſcle leaves it, and proceeds to March over the *Os Cuboides* or *Spongioſum*, and under the *Abductor Minimi Digiti*; whence it paſſes in *Planta Pedis*, between the *Oſſa Cuneformia* and Tendons of the Muſcles Bending the Toes, to its Implantation at the Superior and Hindmoſt Part of the *Os Metatarſi* of the Great Toe, as is Expreſt, *Tab.* 86. *Fig.* 1. M, *Ibid. Fig.* 2. F.

This Contrivance in Nature in conveying the Tendon of this Muſcle, not only over the Lower *Appendix* of the *Fibula*, but on the *Os Spongioſum* (as a Rope on a Double Pully) is very conſiderable in reſpect to its Office; for ſince the Ball of the Great Toe (to which Part this Tendon is Inſerted) is Neceſſary for the Center of Gravity to the Whole Body; it is an Inſtance of the Skill of the Divine Architect ſo to Diſpoſe of this Inſtrument, which brings that Center towards a Perpendicular Bearing (which Neceſſarily Projects from the Fulciment or *Tibia*), by adding this Double Pully; which Compoſing Angles of Contortion do's Reciprocally Augment the Force of making the Ball of the Great Toe Approach towards a right Bearing with the *Tibia*; and by this means ſuſtains the Weight of the Body, tho it is not in a Direct Poſition with the Gravity of the Whole.

D, The *Extenſor Digitorum Pedis Longus*.

EEE, *&c.* Its Five Tendons Inſerted to the Extream Internode of the Leſſer Toes; Two of which go to the Little Toe, as here Expreſt.

e, One of the Tendons of the *Extenſor Digitorum Magnus*, Implanted on the *Os Metatarſi* of the Little Toe.

F, The *Extenſor Digitorum Pedis Brevis*.

fff, Its Tendons.

G, The *Extenſor Pollicis Longus*,

H, The *Extenſor Pollicis Brevis*.

I, The *Tibia*.

K, The *Fibula*.

LLL, The Bones of the *Tarſus* Connected to each other, and the *Oſſa Metatarſi*, by Ligaments.

M, The Great Ligament of the Articulation of the *Tarſus*, with the *Tibia* and *Fibula* Divided, to ſhew the Upper Cartilaginous Surface of the *Os Tali* or *Aſtragalus*.

NN, *&c.* The *Muſculi Inter-Oſſei* lying between the Bones of the *Metatarſus*.

O, The *Abductor Minimi Digiti*.

P, Part of the *Flexor Pollicis Longus* remaining *in Situ* on the Back-part of the *Fibula*.

Q, Part of the *Gaſterocnemius Internus*.

R, The Trunks of the Nerves and Blood-Veſſels which are Inſervient to the Muſcles on the Fore-part of the *Tibia*.

S, The Ligament between the *Tibia* and *Fibula* which Diſtinguiſhes the Muſcles of the Fore-part from thoſe behind.

THE
EIGHTY-THIRD TABLE.

REPRESENTS divers External Muſcles of the Leg and Bottom of the Foot.

A, The Upper *Appendix* of the *Tibia*, which Helps to Compoſe the Internal Lateral Part of the Knee.

B, The Body of the *Tibia*.

C, The *Os Calcis*.

D, Part of the *Muſculus Popliteus* Inſerted to the Upper and Internal Part of the *Tibia*.

E, The *Gaſterocnemius Externus*, ſo call'd, becauſe it's the External Muſcle which Helps to Compoſe the Calf of the Leg: *Veſlingius* Diſtinguiſhes this here Expreſt, with its Companion on the Outſide of the Calf, by the Name of *Gaſterocnemius*, and the Subjacent Muſcle, he calls *Soleus*, from its Figure being like that of the Sole-Fiſh, which Others, as *Spigelius*, &c. call *Gaſterocnemius Internus*. This External Muſcle is alſo call'd *Gemellus*, it being as it were Double; it having Two Diſtinct Fleſhy Originations, from the Superior and Hindmoſt Parts of each Tubercle of the Lower Apendage of the Thigh-bone; which in their Deſcent are each Dilated into Two Large Fleſhy Bellies: The Innermoſt of which is Thickeſt, and Largeſt; each of theſe Fleſhy Bellies having a Differing *Series* of Fibres, join to each other, near where they make a Broad Strong Tendon, which Narrowing it ſelf, joins with the Great Tendon of the *Gaſterocnemius Internus*, Four Finger's Breadth above its Inſertion to the *Os Calcis*.

Riolan Aſſerts with *Veſalius*, That in the Two Beginnings of this Muſcle, there are Two *Oſſicula Seſamoidea*; which we muſt Acknowledge with *Marchette*, have hitherto Eſcap'd our Obſervation, tho' it's likely it may be ſo in Aged Bodies; as Appear'd in a Subject I lately Diſſected, on one Side only.

When this Muſcle Acts, the Foot is ſaid to be Extended or pull'd Backwards, which Motion of it is very Neceſſary in Walking, Running, Leaping, and Standing on Tiptoe, &c. Hence it is thoſe that Walk much, have theſe Muſcles Larger than others, thro' the frequent Uſe of them, and amongſt whom thoſe that carry heavy Burthens, and eſpecially *Sedans* or *Chairs* in this Town; and thoſe who wear Low-heel'd Shoes have theſe Muſcles Remarkably Larger than others.

F, The Tendinous Expanſion of the *Muſculus Plantaris* free'd from the Bottom of the Foot.

G, The *Perforatus*, ſo call'd, becauſe its Tendons are Perforated like thoſe of the Fingers. It is alſo call'd *Flexor Secundi Internodii Digitorum Pedis*, from its Uſe, and *Sublimis* from its Situation: It Springeth from the Inferior and Internal Part of the *Os Calcis*, between the *Muſculi Abductores* of the Greater and Leſſer Toes, Dilating it ſelf to a Fleſhy Belly; after it hath paſs'd the Middle of the *Planta Pedis*; it is Divided into Four Fleſhy Portions, which become ſo many Tendons, and are Divided near their Terminations to Admit the Tendons of the following Muſcles or *Perforatus*, to paſs thro' them to their Inſertions; theſe Tendons being United again, paſs Underneath the *Perforantes* to their Implantations at the Upper-part of the Second Bone of each Leſſer Toe.

HH, The Tendons of the *Perforans* paſſing thro' the Diviſions of thoſe of the *Perforatus* laſt Deſcrib'd.

I, The Tendon of the *Flexor Pollicis Longus*.

K, The *Abductor Pollicis*, ſo call'd from its Office: It Ariſes partly Tendinous and partly Fleſhy from the Internal and Lateral Part of the *Os Calcis*, and in Half its Progreſs Compoſes a Tendon which joins with another Beginning, Springing from the *Os Cuniforme Majus*, and *Naviculare*; both Marching Forwards make one Tendon at its Inſertion to the External Part of the *Os Seſamoides* of the Great Toe Laterally: It draws the Great Toe from the reſt.

L, The *Abductor Minimi Digiti*; this Muſcle is Outwardly Tendinous and Inwardly Fleſhy in its Origin at the External Part of the *Os Calcis*, and becoming Tendinous in Half its Progreſs on the Outſide of the Foot; it joins a Second Fleſhy beginning of this Muſcle, Springing from the Superior and External Part of the *Os Metatarſi* of the Little Toe, makes one Tendon at its Inſertion to the Upper-part of the Firſt Bone of the Little Toe Externally Laterally.

M, The Internal *Malleolus*.

N, The Tendon of the *Tibialis Anticus*.

O, The Tendon of the *Gaſterocnemii*.

P, Part of the Small Long Tendon of the *Muſculus Plantaris*, in its Deſcent towards the Bottom of the Foot.

Q, Part of the *Gaſterocnemius Internus* or *Soleus*.

Note, *That Part of the* Flexor Digitorum Pedis Perforans *and* Flexor Pollicis, *may be ſeen in this Poſition of the Part between* M *and* Q; *but the Membranes not being taken off (in the Subject whence this Figure was taken) thoſe Muſcles are here Expreſt very Obſcurely.*

A

B

N

M

K

T. 84

THE
EIGHTY-FOURTH TABLE.

REPRESENTS the Muſcles of the Hinder-part of the Leg, after the *Gaſterocnemii* are Diſſected from their Originals, and left at their Inſertions.

A A, The Two Inferior Heads of the Thigh-bone.

B, Part of One of the Semilunary Cartilages plac'd in the Articulation of the Thigh-bone with the *Tibia*; this Cartilage together with that on the other Side of this Articulation, Frame Two Shallow Cavities on the *Tibia*, which receive the Prominencies of the Two Inferior Heads of the Thigh-bone: Theſe Semilunary Cartilages are Thick and Large, Externally towards the Surface of the *Tibia*, to which they are Connected and Gradually become Thinner as they Approach the Center of the Upper-part of the *Tibia*; their Figure very aptly Repreſents a Half-Moon; their Office is very conſiderable in preventing thoſe frequent Luxations and Diſlocations which this Part, on very ſlight Occaſions, would otherwiſe be Incident to; for which End theſe Semilunary Cartilages are Connected to the Broad Ligament which Inveſts this Articulation; which Ligament is very well Expreſt in this Figure, it being partly taken off from the Hinder-part of the Articulation, to ſhew the Two Heads of the Thigh-bone.

C, The *Muſculus Popliteus*, by ſome call'd *Subpopliteus*: It Ariſeth with a Short Strong Tendon from the External Head of the Inferior *Appendix* of the *Os Femoris*, whence Deſcending Obliquely over the Juncture, it becomes Fleſhy or more and more Expanding it ſelf, till it's Implanted to the Superior Part of the *Tibia* Internally, immediately below its Upper *Appendix* (a): This Muſcle not only Aſſiſts the reſt Imploy'd in Bending the *Tibia*, but it is Advantageouſly Situated to Antagonize the *Biceps Femoris*, when the Leg or Knee is Bended in Turning the Foot and Toes Inwards.

D, The Internal Part of the *Tibia*.

E E, Parts of the *Gaſterocnemius Externus* Diſſected from their Originations.

F, The Inferior or Internal Surface of the *Gaſterocnemius Internus*; where a very Elegant Diſpoſition of its Fibres are Curiouſly Expreſt, which Appearance I have frequently Obſerv'd; but in ſome Subjects, and particularly in One I lately Diſſected, a quite different *Series* of Fibres of this Muſcle Offer'd: This Muſcle lies under the *Gaſterocnemius Externus* and Part of the *Plantaris*; it's call'd *Soleus* from its Figure; its External Fleſhy Part is Cover'd with a Tranſparent Tendinous Expanſion, which makes it Appear of a Livid Colour; it Ariſes partly Tendinous, but chiefly Fleſhy from the Hindmoſt Part of the Upper *Appendix* of the *Fibula*, and Back-part of the *Tibia*, immediately below the Termination of the *Subpopliteus*, and Increaſing to a Large Fleſhy Belly Compos'd of Various Orders of Fibres, all which being United into a Tendon, join with the Tendon of the External Muſcle, and are Inſerted to the Superior and Hindmoſt Part of the *Os Calcis*. The *Talus* together with the Toes being as it were a Leaver to the Whole Body, ought therefore to be Attended with Muſcles of great Strength to Extend them; wherefore we find thoſe Muſcles ſo much to Exceed their Antagoniſt the *Tibieus Anticus*, as well in the Advantageous Conſtructure of their Differing *Series* of Fleſhy Fibres, as their Magnitude and Inſertion at the Extremity of the *Os Calcis*; by which means they are not only rendred Serviceable in Walking, Running, and the like; but do alſo Support the *Tibiæ* in Standing, leaſt the Weight of the Body ſhould make them Incline Forwards at their Articulations with the Bones of the Feet.

G G, The *Plantaris* left at its Origination; or which I rather believe, after Diſſection from thence, and Rais'd, is there again Faſtn'd; its Proper Situation being between the *Gaſterocnemius Externus* and *Internus*; the Latter of which Muſcles could not without Difficulty be taken from its Origination, as is Repreſented in this Table, and the *Plantaris* left: This Muſcle is ſo call'd becauſe its Tendon is Expanded in the *Planta Pedis*, like that of the *Palmaris* in the Palm of the Hand: It Ariſes Fleſhy from the Superior and Back-part of the External Head of the Thigh-bone, immediately under the Outmoſt Beginning of the *Gaſterocnemius Externus*; whence Deſcending Obliquely between the Two *Gaſterocnemii*, Compoſes a Thin, Long, Flat Tendon, which paſſes Out from between the Fleſhy Bellies of the laſt nam'd Muſcles, and Deſcends Internally Laterally by their Great Tendons (as is Expreſt in the preceding Table P,) and Marches over the *Os Calcis*, Expanding it ſelf on the Sole of the Foot; where it almoſt Inſeparably Adheres to the Fleſhy Body of the *Muſculus Flexor Digitorum Perforatus*, and is Inſerted on both Sides the Firſt Internodes of each Leſſer Toe, and ſometimes to that of the Great Toe.

The Office of this Muſcle is very Obſcure; its Tendinous Expanſion on the Bottom of the Foot, is chiefly Serviceable in Defending the Subjacent Muſcles, Tendons, Nerves, and Blood-Veſſels, from being Compreſt in Standing, Walking, *&c.*

N. B. *In ſome Bodies the Fleſhy Beginning and Long Tendon of this Muſcle is wanting.*

g, The Tendinous Expanſion of the *Plantaris* ſeparated from the Bottom of the Foot.

H, A Large Nerve in its way to the Bottom of the Foot and Toes.

I, The Beginning of the *Flexor Pollicis in Situ.*

K K, Part of the *Peroneus Secundus.*

L, The Beginning of the *Perforans in Situ.*

M, The *Abductor Pollicis.*

N, The Skin and Fat taken off the Heel and Bottom of the Foot.

THE

EIGHTY-FIFTH TABLE.

ALL the Muſcles Repreſented in the Preceding Table Rais'd from their Originals, and left at their Inſertions.

A, The Inferior Part of the *Muſculus Popliteus* at its Inſertion to the Internal and Upper Part of the *Tibia*.

a, The Internal Part of the Knee.

B, The Great Bone of the Leg call'd *Tibia*;

C, The Leſſer Bone call'd *Fibula*.

D D, The Two Beginnings of the *Gaſterocnemius Externus*; E, its Conjunction with the Internal Gaſterocnem Muſcle.

F F, The *Muſculus Plantaris* plac'd between the External and Internal Gaſtarocnem Muſcles.

G, The *Tibialis Poſticus*, ſo call'd from its Situation on the Back-part of the *Tibia*; it's alſo call'd *Nauticus*, from the Uſe which Mariners make of it in Climbing up their Maſts; it's plac'd under the *Flexor Pollicis Longus* and Part of the *Perſorans Digitorum Pedis*; in ſome Subjects it ſeems to have Two Fleſhy Bellies: This Muſcle remains undivided between the Bones after the Circular Inciſion for Amputations of the Leg below the Knee: It Springs from a partly Tendinous and Fleſhy Origination at the Superior and Back-part of the *Fibula*, as alſo from the Ligament between the *Tibia* and *Fibula*; whence Deſcending, becomes Tendinous as it runs in a *Sinus* on the Back-part of the Lower Appendage of the *Tibia* call'd *Malleolus Internus*, under an Incloſing Ligament, and is Inſerted to the *Os Naviculare*: This Draws the Foot Upwards and Inwards.

H, The *Perforans* or *Flexor Tertii Internodii Digitorum Pedis*; It hath an Acute Fleſhy Origination from the Back-part of the *Tibia*, immediately under the *Subpopliteus*, having a Double Order of Fleſhy Fibres United to a Middle Tendon like the *Flexor Pollicis Longus*, but ceaſes to be Fleſhy as it Marches behind the *Malleolus Internus*, Running in a Channel over the Internal Part of the *Os Calcis*, and under its Incloſing Ligaments; in Half its Progreſs through the Bottom of the Foot, its Tendon is Divided into Four, which March through the Fiſſures of the Tendons of the *Perforatus* I, and are Inſerted to the Third Bones of the Leſſer Toes.

I, The *Perforatus in Situ*, Deſcrib'd *Tab.* 83.

K, The *Flexor Pollicis Pedis Longus* is an Antagoniſt to the *Extenſor Longus*; It Ariſes oppoſite to it from the Back-part of the *Fibula*, with a Double Order of Fleſhy Fibres paſſing to a Middle Tendon; it ceaſes to be Fleſhy as it paſſes over the Juncture of the *Talus*, running through a Channel on the Internal Part of the *Os Calcis*, its Tendon ſtill Marches under the Tendon of the *Muſculus Flexor Digitorum Longus Perforans*, to which it moſt commonly joins, and paſſes in a Depreſſure made in the *Flexor Pollicis Brevis* (Elgantly Expreſt in this Figure) to its Inſertion at the laſt Bone of the Great Toe: Its Name Declares its Office. There are many remarkable Parts Expreſt in this Figure, which have been already Explain'd in the preceding Tables, as the *Os Calcis* made bare, the *Malleolus Internus*, the *Muſculus Abductor Minimi Digiti*, &c. Wherefore we ſhall not Inſert particular Characters of them here, as we have done in the foregoing Tables.


D
D
a
C
B
H
G

Fig. 1.

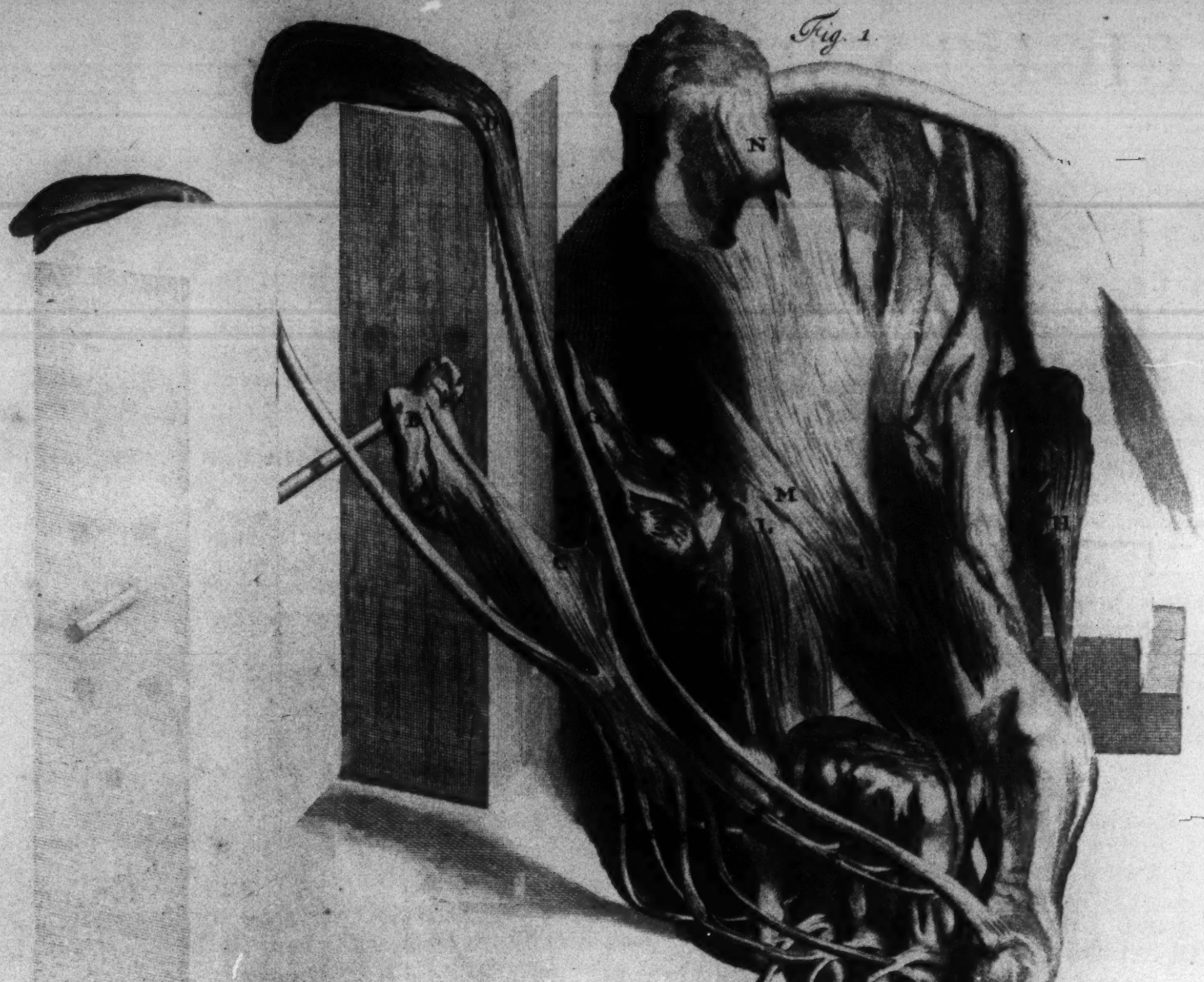
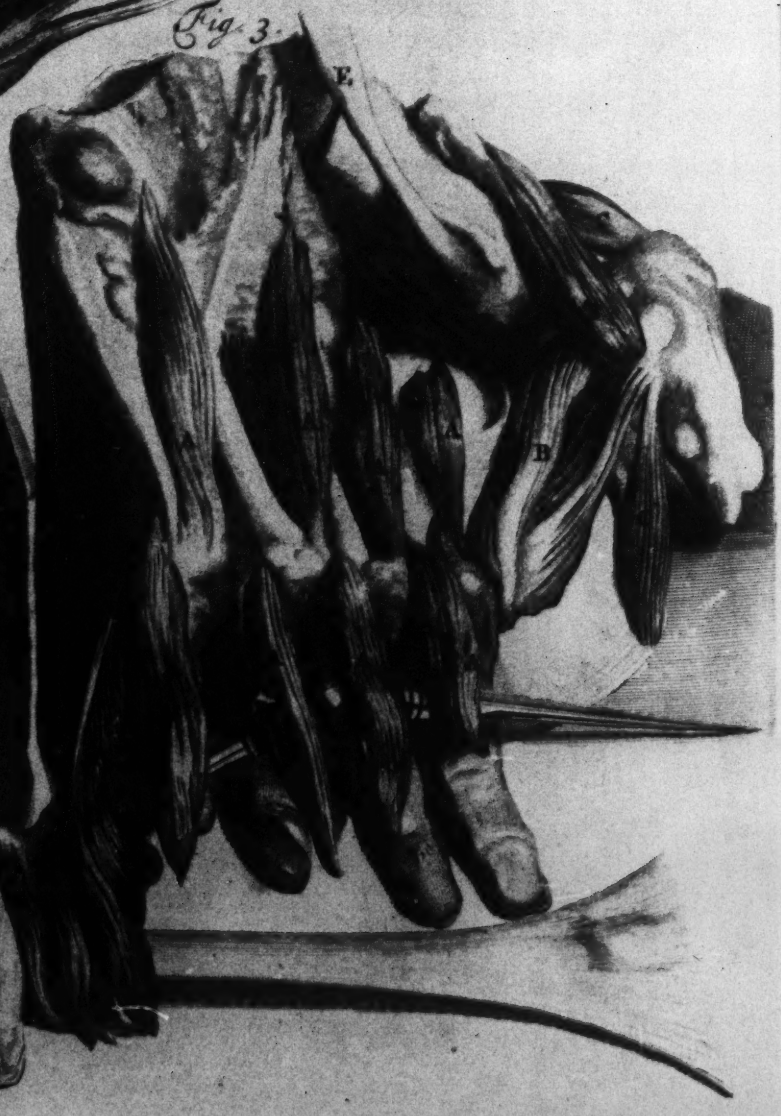


Fig. 2.

Fig. 3.



THE

EIGHTY-SIXTH TABLE.

Fig. 1.

EXHIBITS all the Muſcles which Appear in the Bottom of the Foot, after the Expanſion of the *Plantaris* is remov'd.

A B C, The *Muſculus Lumbricalis*, by ſome call'd *Carnea Maſſa in Planta Pedis*; It Springs Fleſhy from the Internal Part of the *Os Calcis*, and Growing Tendinous, joins with the Tendons of the *Perforatus*; where Growing Fleſhy again, Divides its ſelf, and Compoſes the Four *Muſculi Lumbricales* F F E, (properly ſo call'd from their Figure); all which become Tendinous at their Inſertions to the Internal Parts of each Leſſer Toe, Laterally next the Great Toe: It is alſo call'd *Flexor Primi Internodii Digitorum Pedis*, from its Uſe.

a a a, The Tendons of the *Perforans* Running thro' the Fiſſures of the *Muſculus Perforatus*; which is here Diſſected from its Original, and left at its Inſertions to the Leſſer Toes, that of the Little Toe being wanting.

D, Part of the *Flexor Pollicis Longus*.

G, The *Abductor Minimi Digiti Pedis* cut from its Firſt Original at the *Os Calcis*, and left at its Second, at the *Metatarſi Minimi Digiti*.

H, Part of the *Abductor Pollicis*.

I, The *Flexor Pollicis Pedis Brevis* in its Proper Situation.

K, The *Tranſverſalis Pedis* in like Manner *in Situ*.

L, Parts of the *Inter-Oſſei*.

M, Part of the Tendon of the *Peroneus Longus*, in its Way to its Inſertion in the Bottom of the Foot.

N, The Heel-bone.

Fig. 2.

A, Between C C, and D, The *Flexor Pollicis Brevis*: This, as Appears in the preceding Table, ſeems to be Divided into Two Parts, by the Tendon of the Long Muſcle Bending the Great Toe paſſing over it: It Ariſeth from the *Os Cuneforme Medium*, and Marching over the Termination of the *Peroneus Longus*, is Implanted to the *Oſſa Seſamoidea* of the Great Toe, which Bones are (like the *Patella*) afterwards Tied to the Second Internode of that Toe: Its Name declares its Office.

B, The *Abductor Minimi Digiti* cut from its Origin and Pinn'd up.

A A A A, The *Muſculi Inter-Oſſei in Situ*, ſomewhat Rais'd.

C C C, Part of the *Abductor Pollicis*, and *Flexor Brevis*.

D, The *Adductor Pollicis*: This Ariſes partly Tendinous and partly Fleſhy from the Inferior Part of the *Os Cuneforme Tertium*, after Compoſing a Fleſhy Belly, is Leſſen'd at its Inſertion to the Part of the Outermoſt *Os Seſamoides* of the Great Toe: Its Denomination Expreſſes its Uſe.

E, The *Tranſverſalis Pedis*, ſo call'd from its Situation: It Ariſeth Tendinous from the External *Os Seſamoides* of the Great Toe, and becoming a Fleſhy Belly in its Progreſs over the Firſt Internodes of the Two next Toes, it is Leſſen'd at its Inſertion to the Inferior Part of the *Os Metatarſi* of the Little Toe: Its Office is to bring the Leſſer Toe towards the Greater.

F, The Tendon of the *Peroneus Longus* at its Termination.

G, The *Os Calcis*.

N. B. *Parts of the Tendons of the* Perforatus *and* Perforans, *are Expreſt at their Terminations on the Bones of the Toes.*

Fig. 3.

A A, *&c.* The Eight *Muſculi Inter-Oſſei* of the Toes, according to *Bidloo* and Others; the Firſt of which lying on the Little Toe, we chooſe to call from its Office, *Flexor Primi Internodii Minimi Digiti*, it not lying between the Metatarſal Bones like the reſt: Its Riſe being from the Superior Part of the *Os Metatarſi Minimi Digiti*, it paſſes Directly to its Inſertion in the Firſt Bone of the Leſſer Toe. The *Inter-Oſſei* are in Number Seven, they derive their Names from their Situation, and may each deſerve a Proper Appellation from their Uſe: The Firſt next to the Muſcle laſt Deſcrib'd, may be call'd *Adductor Minimi Digiti*; the Second is the Largeſt, and draws the next Toe towards the Leſſer, and may be call'd *Abductor Auricularis*; the Third Antagonizes the Former, and is an *Adductor* of that Toe; the Fourth is an *Abductor Medii Digiti*; the Fifth is an *Adductor* of the ſame; the Sixth is an *Adductor*; and the Seventh an *Abductor Indicis Pedis*: Their Origination, Progreſs, and Inſertion, may be ſeen Expreſt in this Figure.

B B, C C, Divers Muſcles of the Great Toe which are confuſedly Diſpos'd.

D, The *Abductor Minimi Digiti*.

E, The Tendon of the *Peroneus Longus*, at its Implantation to the *Os Metatarſi* of the Great Toe.

THE

EIGHTY-SEVENTH TABLE.

HAVING Examin'd the Muſcles of the Limbs and moſt of thoſe of the Head, Trunk and other Parts of the Body, and taken Notice of many of the moſt Remarkable Ligaments in divers Articulations of the Bones: We come next to View the Whole Compages of the Bones when Dried, call'd the *Skeleton*; the Fore-part of which is Repreſented in this Table. If you Examine the Proper Situation of each Bone, you will find none of them plac'd in a Perpendicular Bearing to each other: Above Two Thirds of the Whole Head, Projects from its Articulation with the *Vertebræ* of the Neck: The Whole Ribs and *Sternum* which Compoſe the Fore-part of the *Thorax*, together with all its *Viſcera*, as well as the *Viſcera* of the Lower Belly, Project from the *Vertebræ* of the Back and Loins: The *Claviculæ* whoſe Poſitions are Horizontal, Support the Arms, by their Connections with the *Scapulæ*: The Articulations of the Thigh-bones are not Perpendicular to the Grand Fulciment of the Head and Trunk; (*i. e.* the Whole *Vertebræ*,) but are plac'd before it. The Thigh-bones Stand Obliquely Inwards, and ſo do the *Tibiæ*, tho' not in ſo great a Manner. We Stand either on the Extremity of the *Os Calcis*, and Ball of the Great Toe together; or elſe on the Ball of the Great Toe only, as on Tip-Toe.

A, The Forehead-bone Divided into Two Parts, by means of a Continuation of the Longitudinal Suture, which may be ſeen in divers Subjects as here Expreſt; nor do's ſuch an Appearance Determine the Sex as ſome pretend.

B, The *Bregma*.

C, The Temple-bone call'd *Squamoſum*.

D, The Yoke-bone or *Os Jugale* Compos'd of Two Proceſs's; the one deriv'd Backwards from the *Os Squamoſum*; the other Forwards from the Firſt Bone of the Upper Jaw.

E, The Fourth Bone of the Upper Jaw.

F, The Lower Jaw-bone.

G, The Teeth call'd *Inciſores*.

H, The Firſt Rib near its Articulation with the *Vertebræ* of the Neck.

I, The *Clavicula* on the Right Side.

K, The *Proceſſus Coracoides Scapulæ* on the Left Side.

L, The *Sternum* or Breſt-bone.

M M, *&c.* The Seven True Ribs.

N N, *&c.* The Five Baſtard Ribs, call'd *Nothæ* or *Spuriæ*.

O O, *&c.* Divers of the Twelve *Vertebræ* of the Back.

P P, *&c.* Four of the Five *Vertebræ* of the Loins; the Uppermoſt being hid by the Cartilages of the Baſtard Ribs.

Q, The *Os Ilium*.

R, Its Conjunction with the *Os Pubis* in the *Acetabulum*.

S, The *Os Pubis*.

T, The *Os Sacrum*.

V, The Upper-part of the *Oſſa Pubis*, behind which, is the *Os Coccygis*, not to be ſeen in this Poſition.

W, The *Os Humeri* or Shoulder-bone.

X, The *Ulna*, Expreſt in its Whole Length in the Left Arm.

Y, The *Radius*; between which and Z, are contain'd the Eight Bones of the *Carpus*.

Z, The Bones of the Hand, particularly thoſe of the *Metacarpus*.

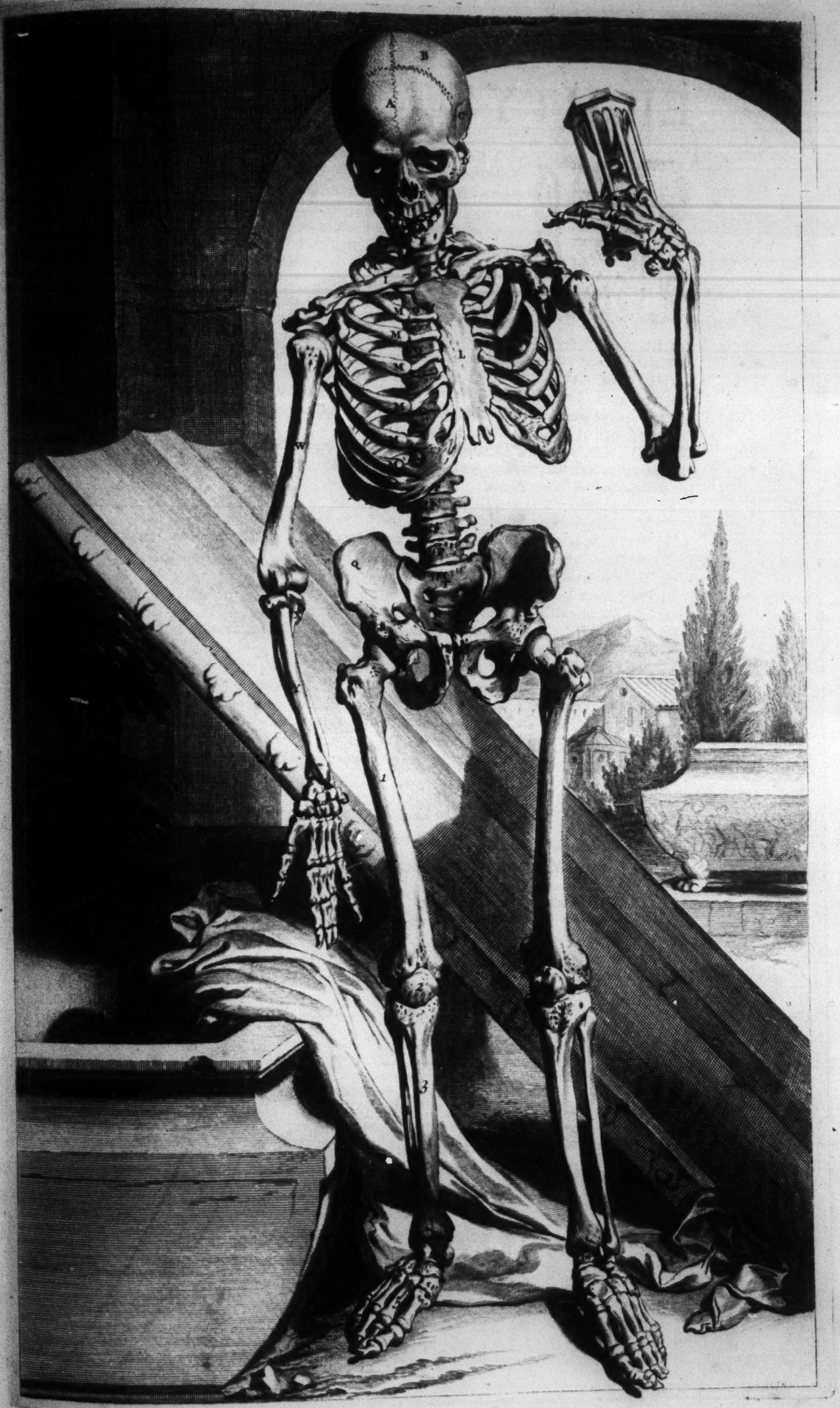
1, The Thigh-bone.

2, The *Patella* or Knee-pan.

3, The *Tibia*.

4, The *Fibula*.

5, The Bones of the Foot.


B
A
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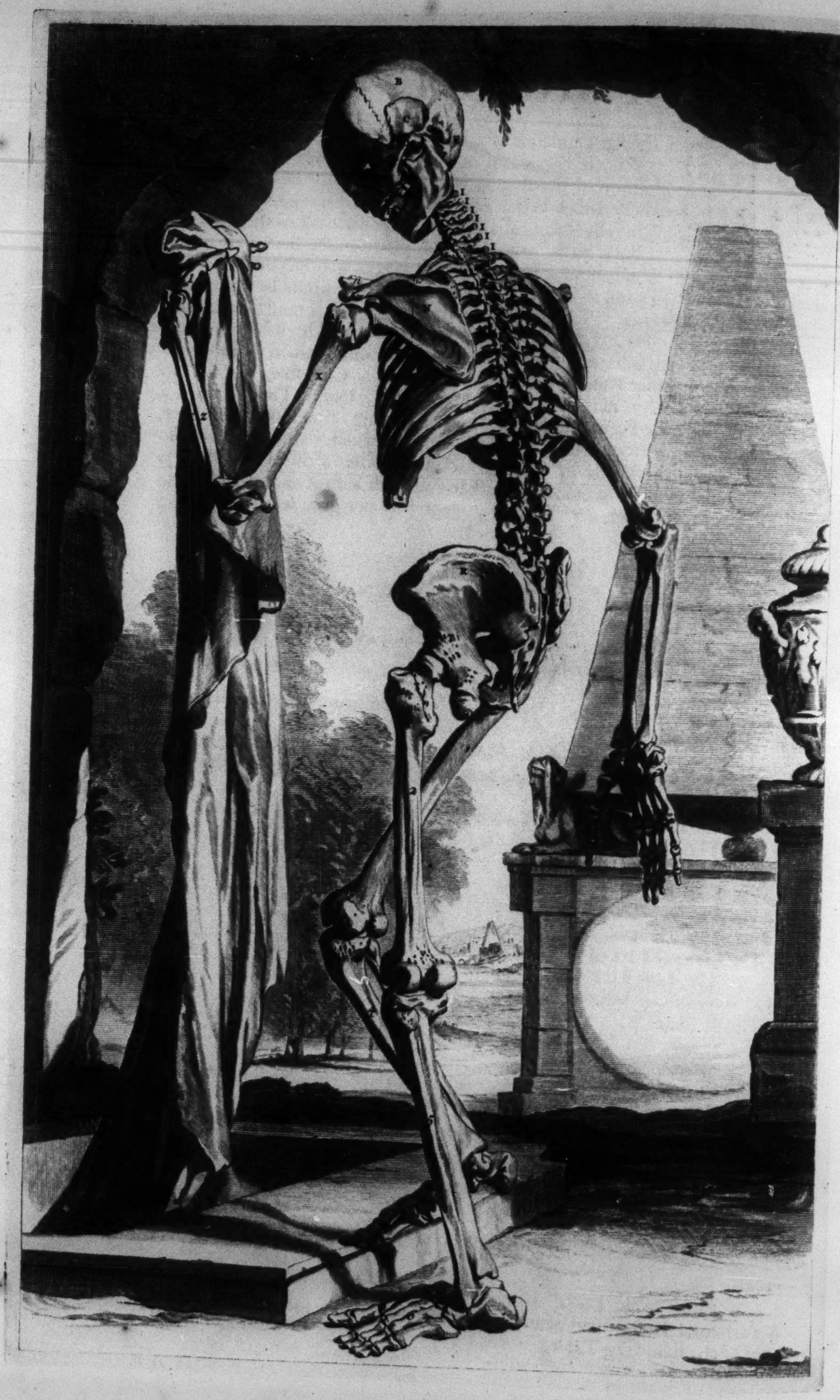


THE

EIGHTY-EIGHTH TABLE.

THIS the Back and Side of a Humane *Skeleton.*

What has been ſaid in the preceding Page relating to the Poſition of the Bones, with reſpect to their Bearing on each other, ſeems better Explain'd in the Figure of this Table: Whereby it Appears, if the Muſcles which draw the Head Up, or Backwards, as well as thoſe plac'd on the Back-part of the Whole Spine, were not very Large as well as Numerous, the Trunk of the Body as well as the Head, would be continually ſubject to fall Forwards. Nor could we Stand, much leſs Tranſlate the Body from one Place to another, if the Extending Muſcles of the Thigh-bones, thoſe of the *Tibiæ* and Feet, were not very Strong, as is elſewhere taken Notice of in the Deſcription of thoſe Muſcles. Hence we may eaſily Conceive, why we can with leſs Difficulty continue a Progreſſive Motion for a longer Time, than in a Standing Poſture; the Former being an Alternate Acting of moſt of the Muſcles; the Latter a Continued or Tonic Action of ſome few Muſcles only. Hence alſo we may be Inform'd, why the greateſt Part of the Gravity of the Whole Body is ſuſtain'd by one Leg only in Standing, rather than with both at once: And divers other *Phænomena* of which my Time at preſent will not give leave ſo much as to make mention.

A, The Forehead-bone.
B, The *Bregma.*
C, The Temple-bone.
D, The Yoke-bone.
E, The Bone of the *Occiput*; near E is the Mammiform Proceſs.
F, The Bones of the Upper-Jaw.
G, The Lower Jaw-bone.
H, The Fourth Bone of the Upper-Jaw which Conſtitutes the greateſt Part of the Roof of the Mouth.
IIIII, Five of the Spines of the *Vertebræ* of the Neck; the Uppermoſt Ariſing from the Second *Vertebra*, being Short and Double, do's not Appear in this Poſture.
II *Inferior*, The Spines of the Two Firſt *Vertebræ* of the Back or *Thorax.*
KK, *&c.* The reſt of the Spines of the *Vertebræ* of the Back,
LL, Thoſe of the Loins.
M, The Firſt Rib.
N, The *Scapula* or Shoulder-blade.
n, Part of the *Clavicula* Articulated to the Spine of the *Scapula.*
O, The Internal Part of the *Sternum* or *Os Pectoris.*
PP, *&c.* The True Ribs.
QQ, Some of the Inferior or Baſtard Ribs.
R, The *Os Ilium,*
S, The *Sacrum,*
T, The *Iſchium,*
V, The *Coccygis.*
W, The Internal Part of the *Os Pubis.*
X, The *Os Humeri* or Shoulder-bone.
Y, The *Ulna.*
Z, The *Radius.*
1, The Bones of the Hand.
2, The Thigh-bone.
3, The *Patella.*
4, The *Tibia.*
5, The *Fibula.*
6, The Bones of the Foot.

A Particular Deſcription of each of theſe Bones, may be ſeen in the Explications of the following Tables.

THE
EIGHTY-NINTH TABLE.

THIS and the Three following Tables Represent the Bones of the Skull, and those of the Upper and Under Jaws.

The Bones which Compose the Skull are the *Ossa Frontis*, *Sincipitis*, *Occipitis*, *Temporum*, *Sphenoides* and *Cribriforme*: Of these the Four First are esteem'd Proper to the Skull; the Two Latter are said to be Common to the Skull and Upper Jaw. The Bones of the Upper and Under Jaws will be more particularly Treated of in *Tab.* 92.

Fig. 1.

The Convex Fore-parts of the Forehead-bone, with those of the Upper-Jaw and *Os Sphenoides*, as they Appear Separated from the rest of the Bones of the Skull.

A, The Forehead-bone whose Superior Margin, Sutur'd with the the *Ossa Sincipitis*, Composes near Two Thirds of a Circle.

B B B, Parts of the Superior *Lamellæ* or Table which sticks out with Sharp Edges and Points, which are receiv'd in the *Interstitia* of the like Fram'd by the *Ossa Sincipitis*, which Conjunction is call'd *Sutura*.

C C, The Lower-part of the Frontal-bone, Composing the Superior Part of the Orbit of the Eye.

D, A Process of the *Os Frontis* near the Great *Canthus* of the Eye.

E, Another Process of the same Bone towards the Lesser *Canthus*.

F, Part of the *Os Cuneiforme* join'd to the Frontal-bone, by *Bidloo* call'd Two Eminencies of the last nam'd Bone, on both Sides towards the Temples.

G, In this as well as the rest of the Bones of the Skull, may be seen divers *Foraminulæ* for the coming in and going out of Blood-Vessels, whether belonging to the *Dura Mater* and Common Integuments of the Skull, or *Diploi* of the Skull it self.

H, That Part of the *Os Frontis*, where a Cavity is Fram'd containing a Pituitous Membrane, which is continuous with that of the *Foramina Narium*, and Helps to Separate Part of the *Mucus* that is Excreted at the Nose. This Cavity is often Divided with a *Septum Osseum*; as Appears in *Tab.* 91. *Fig.* 2. In some Humane Skulls this Cavity scarce Appears, in others it is very Large, especially in those who have Projecting Eye-brows. Those that take much Snuff may have Part of it, get up into this Cavity, and there Lodge, and prove Pernicious. In Quadrupedes these Cavities are Large and Divided by divers Bony Partitions, and Communicate with each other by Various Apertures: In Sheep I have frequently found in those Cavities divers Large Maggots, not unlike the Great *Eruca Terrestris*. In Cows, Bulls, &c. these Cavities are very Large; in these Animals the Pituitary Membrane which Invests these Cavities, frequently becomes Inflam'd and Thickned; whereby the *Pituita* is Pent up in these Cavities, and causes a Disease in those Animals, call'd *the Staggers*; for which the Country People (particularly in *Sussex*) perform this following Operation, and the Animal is presently reliev'd.

The Head of the Beast being held in a convenient Posture, and the Operator Furnish'd with a Mallet and Large Broad Chisel: With One or Two Stroaks he drives his Chisel into the *Os Frontis*, which Composes this Cavity; this done, he raises up the Bone with its Superjacent Parts, by means of the Chisel; then with his Fingers he Separates the Pituitary Membrane from the Bone, and draws it out: This done, he presently Depresses the Rais'd up Parts with his Hand; and the Divided Bone afterwards Unites, and the Animal is seldom Troubled with the like Disease afterwards.

This Membrane fill'd with *Pituita* (they tell you) is a Water-bag lying on the Brain.

The rest of the Bones Expresst in this Figure are Explain'd *Tab.* 92. *Fig.* 1.

Fig. 2.

The Internal Concave Parts of the same Bone Represented in the preceding Figure.

A, That Part of the *Os Frontis* which receives the Fore-part of the Brain.

B B, The Saw-like Appearance of the *Os Frontis* after Disjunction from the Bones of the *Sinciput*, at the Coronal Suture.

C C, The Superior and Fore-part of the *Os Cuneiforme*, join'd to the Frontal-bone.

D D, The Internal and Anterior Process's of the *Os Cuneiforme*, which Help to Compose the *Sella Equina*, or *Turcica*; in this Sell the Pituitary Gland is Lodg'd; the Contorted Trunks of the Carotid Arteries pass by it on each Side in their Way to the Brain, where they send out divers Small Branches which Help to Compose the *Rete Mirabile*: This Process gives way to the Optick Nerves in their Progress to the Eyes.

F F *Inferior*, Two Internal Long Processes of the *Os Sphenoides* join'd with the *Os Frontis*.

F F *Superior*, The Impressions which the Blood-Vessels make in the Frontal-bone in their Distribution on the *Dura Mater*.

G, An Internal Process continued from the *Os Cribrosum* or *Ethmoides*, Distinguishing the Right-Side of the Frontal-bone from the Left.

H, That Process of the *Os Cribrosum*, call'd *Crista Galli*.

I I, The Internal Part of the *Os Cuneiforme* or *Sphenoides* next the Brain.

K, The Lower-part of the Fourth Bone of the Upper Jaw, which Composes the Roof of the Mouth, by some call'd *Os Palati*.

L L, The *Processus Pterygoides* or *Aliformis*.

M M, The Internal and Back-parts of the Two First Bones of the Upper Jaw.

N, Part of the Fourth Bone of the Upper Jaw, in which the Upper Teeth are Fasten'd.

O O, Two of the *Dentes Molares* left in both Sides of the Upper Jaw.

P, The *Septum* of the *Foramina Narium*.

Q, That Part of the *Os Cuneiforme* that was join'd to the Occipital Bone by *Syncondrosis*, which Conjunction becomes intirely Bony in Aged Bodies.

R, The Two Hinder Processes of the *Os Sphenoides*, which Compose the Back-part of the *Sella Turcica*, call'd *Ephippium*.

N.B. *Between* C D, *and* I, *on either Side, is Expresst the Second Perforation of the* Os Sphenoides *or Large* Rima, *thro' which pass the Third, Fourth, Sixth, and a Branch of the Fifth Pair of Nerves, together with divers Blood-Vessels, particularly a Large Branch of the Carotid Artery and Vein; which Latter is Figur'd* Tab. 9. Fig. 2. F. *The other* Foramen, *here Expresst immediately under the last mention'd, or between it and the* Processus Pterygoides (L), *is reckon'd the Third* Foramen *of the* Os Cuneiforme, *by which a Branch of the Fifth Pair of Nerves passes out of the Skull: The rest of the* Foramina *of the* Os Cuneiforme *are the Fourth, Fifth, Sixth, and Seventh; the First of these namely the Fourth is Expresst in the First Figure of this Table, and again in* Tab. 92. Fig. 1. I, *within the Orbit of the Eye, and in* Fig. 2. *of the same Table* (V V); *by this* Foramen, *or rather Large* Rima *like the Second* Foramen (*made by the Fourth Bone of the Upper Jaw and* Cuneiforme) *pass the Branches of the Third, Fifth and some of the Sixth Pair of Nerves, after passing thro' the Second* Foramen, *to the Adjacent Muscles and Parts, together with Large Blood-Vessels of both Kinds, especially to the Temporal Muscle. The Fifth* Foramen *of the* Os Cuneiforme, *is Compos'd at its meeting of the* Os Petrosum *and* Occipitale, *Expresst* Tab. 92. Fig. 2. X, X; *which External Aperture there Represented, is partly fill'd with a Cartilage, but its Internal* Foramen *Transmits the Carotid Artery to the Lateral Part of the* Sella Equina; *which Artery First enters the* Cranium *by the* Os Petrosum, *as Appears in the last mention'd Figure* (Z Z); *by this* Foramen *the Intercostal Nerve passes out of the Skull. The Sixth Perforation of the* Os Sphenoides *is Describ'd in the last mention'd Table and Figure* (Y), *and is Compleatly fill'd by a Branch of the Fifth Pair of Nerves: The Seventh* Foramen *of this Bone is Externally Laterally Adjacent to the Sixth, and is most commonly of an Oval Figure; by it a small Branch of the Carotid Artery passes to the* Dura Mater, *Accompanied with a Vein Running Paralel with it; which Frame those* Sulci *in the Bone, Expresst in this Figure* (F F Superior), *and in that of* Tab. 91. Fig. 2. F F.

THE

Fig. 1.

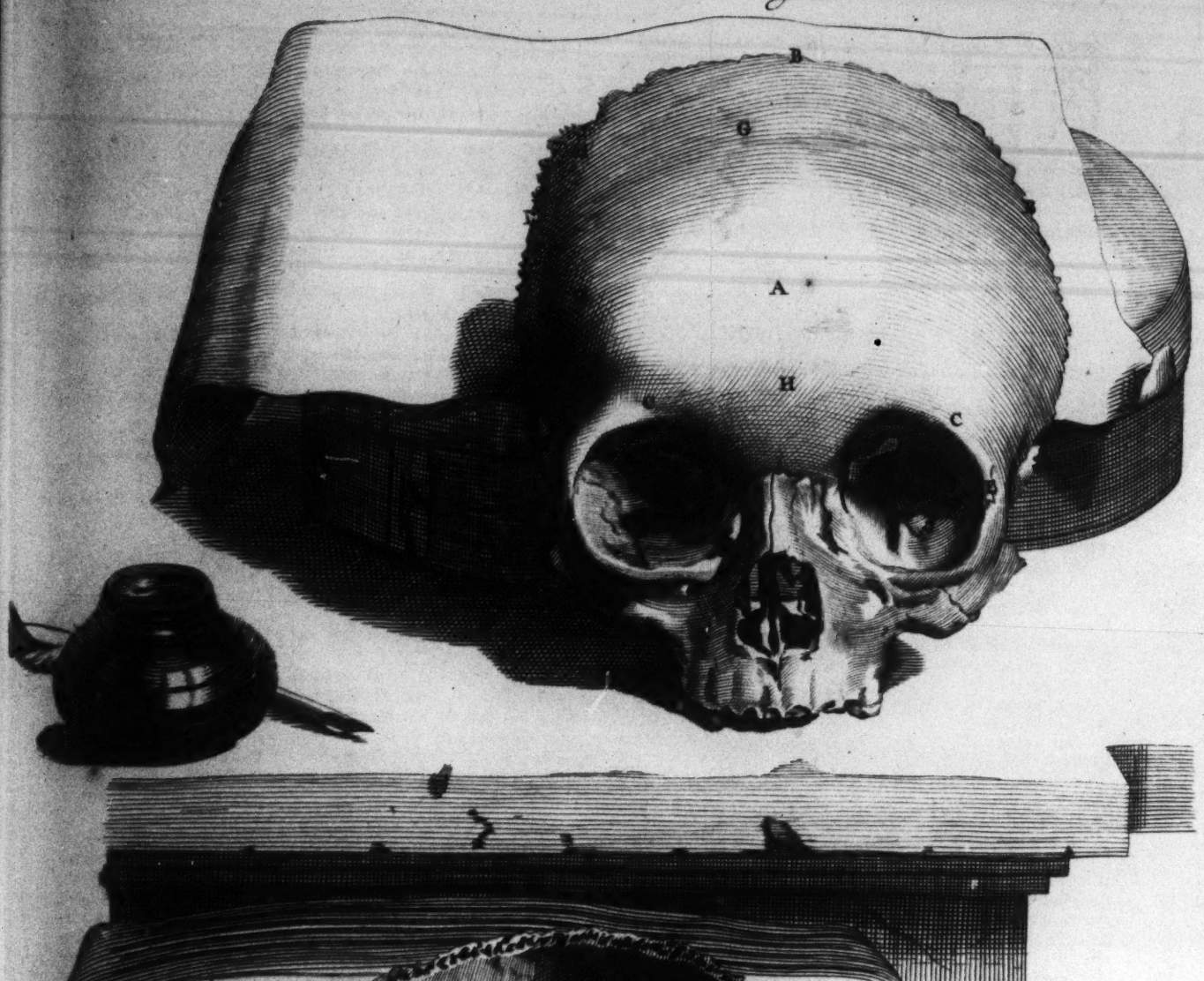


Fig. 2.

Fig. 7.

Fig. 8.

Fig. 2

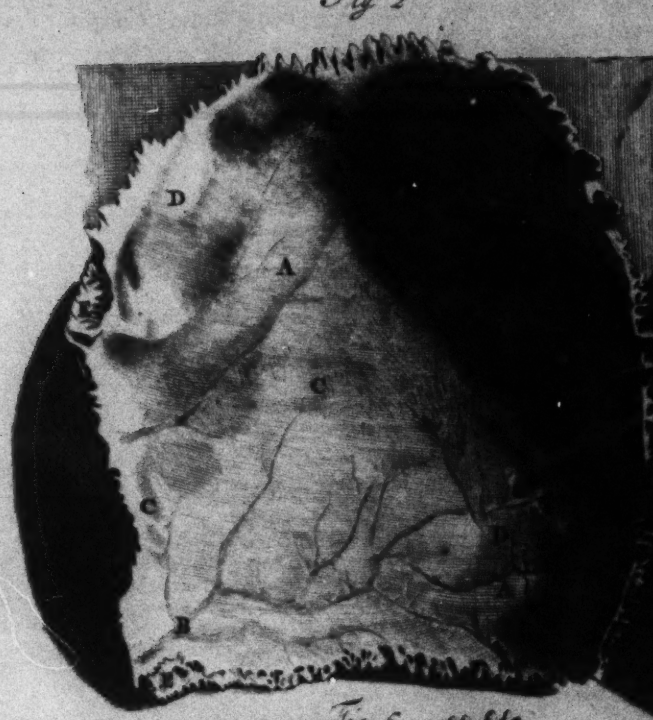


Fig. 1.

Fig. 6.

Fig. 5.

Fig. 11.

Fig. 10.

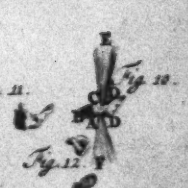


Fig. 12.

Fig. 9.

Fig. 4.

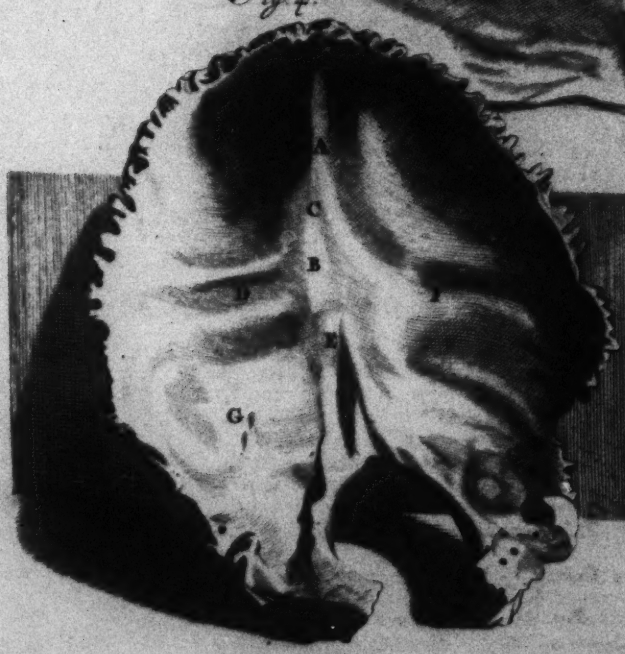


Fig. 3.

THE
NINETIETH TABLE.

THE Six First Figures Represent the Internal and External Surfaces of the rest of the Proper Bones of the Skull, when Separated from each other at their Sutures.

Fig. 1.

The Bone of the *Sinciput* or *Bregma* of the Right Side.

A A, The External Convext Part of the *Bregma*, Circumscrib'd by

B B, The Coronal Suture in the Fore-part, joining it to the *Os Frontis*;

C C, The Sagittal Suture in the Superior Part, by which the Right and Left *Bregma* are Distinguish'd;

D D, The Lambdoidal Backwards, by which it is Connected to the *Os Occipitis*.

D, A, B, The Inferior Side of the *Bregma*, on which the Superior Part of the *Os Temporum*, and Part of the *Os Cuneiforme* Rests.

Fig. 2.

The Internal Surface of the Left Sincipital-bone next the *Dura Mater* and Brain.

A A, The Internal Concave Part of the *Os Sincipitis*.

B, C, D, The Furrows which the Blood-Vessels of the *Dura Mater*, make on the Internal Surface of this Bone; where may be observ'd many *Foramina* these Vessels have, for their Entrance into the *Meditullium* of the Bone; sometimes we have seen these Vessels Perforate the *Cranium* Directly, in more than in one or two Places, especially towards the *Occiput*, where Two of their Large *Foramina* are commonly to be Observ'd on the External Surface of the Bone; but here also they sometimes pass Obliquely into the *Meditullium*: The Number and Magnitude of these *Foramina* for the Blood-Vessels, may be seen to Increase near the Impression which the Longitudinal *Sinus* makes in the *Cranium*.

E E, That Part of the *Bregma* that was Contiguous to the *Os Temporale*, and Upper-part of the *Os Sphenoides*.

Fig. 3.

The Occipital Bone Separated at its Conjunction from the rest of the Bones of the *Cranium*.

A, The External Convext Surface of the Occipital-bone, where the Muscles Extending the Head, are Implanted, and Part of the *Musculus Cucullaris* do's Arise.

B, The First Great *Foramen* of the Occipital-bone, by which the *Medulla Oblongata* Descends out of the *Cranium* into the Great Cavities of all the *Vertebræ*.

C C, Two Depress'd Protuberancies of the Occipital-bone, which are receiv'd into the Shallow Cavities of the First *Vertebræ* of the Neck.

D, Two Depressures Fram'd at the Origin of the *Musculi Recti Minores* of the Head.

E, A Third *Foramen* Appearing in the Internal Part of the Left Side of the *Os Occipitis*; by which the Nerve of the Ninth Pair on that Side passes out of the *Cranium*; that of the Right Side not Appearing in this Position of the Bone. The Second *Foramen* of the *Os Occipitis*, is Fram'd at its Conjunction with the *Os Temporum*, and Helps to Compose the *Specus* which receives the Bulbous Part of the Lateral *Sinus*, at the Beginning of the Internal Jugular Vein.

Fig. 4.

The Internal and Concave Part of the *Os Occipitis* next the *Dura Mater*, on Part of the *Cerebrum* and *Cerebellum*.

A, B, C, A Rising in the Bone Fram'd Collateral to the Lower-part of the Longitudinal *Sinus*, where it meets with the Two Lateral Sinus's.

D F, Two Depressures parting to each Side from the Inferior Part of the last mention'd Rising; in which the External Surface of the Lateral Sinus's are Entertain'd.

E, That Part where the Longitudinal and Lateral Sinus's meet, which Conjunction is call'd *Torcular Herophili*.

G G, Divers *Foramina* by which the Blood-Vessels enter the *Meditullium* of the Bone.

Fig. 5.

The External Surface of the *Os Temporale* or *Squamosum* of the Right Side, when free'd from the *Os Occipitis*, *Sincipitis*, and *Cuneiforme*.

A, The *Meatus Auditorius*, being the continued Passage from the *Conchs* (Expresst *Tab.* 12. *Fig.* 1. C, D, E,) to the *Membrana Tympani*: In this *Meatus* (by some call'd *Arcuate Auris*, and *Porus Auditorius*,) is contain'd the Glandulous Membrane, in which the *Cerumen* commonly call'd the Ear-Wax, is Separated from the Blood; which Membrane is frequently Ulcerated, being very liable to Obstructions in its Circulating Blood and Separated Matter, by reason of the vast Numbers of Vessels that are Necessary in the Composition of its Glandulous Structure; here also Arise Excrescencies, some of which we have seen very much like those of the *Foramina Narium*, commonly call'd *Polypi* from their Figure: Others I have Observ'd to be like Mulberies, and the Patient has suffer'd great Pain when they have been but touch'd with a Probe: Nevertheless I have frequently Consum'd them with Caustick, and the Patient has recover'd his Hearing. These Excrescencies last mention'd, commonly Arise after Impostumations on the Glandulous Membrane of the Ear.

B, A *Sinus* cover'd with a Cartilage, which receives the Head of the Long Process of the Lower Jaw, by the Mediation of a Cartilaginous Body, Describ'd in our *Appendix* Fig. 8. S, T.

C, D, That Part of the *Os Temporale* plac'd between the *Os Occipitale* and *Cuneiforme*, call'd the Third Process of that Bone, in which the Internal Organs of Hearing are contain'd.

E, The Second Process of the *Os Squamosum* or *Temporale*, which joining with the Process of the First Bone of the Upper Jaw, Composes that Bone call'd *Jugale*.

F, The First Process of the Temple-bone, call'd *Mastoides* or *Mammiforme*, whose Internal Part is Cavernulous, and Opens into the *Tympanum*.

C, G, That Part of the Temple-bone which is Contiguous to the *Os Occipitis*.

G, H, That Part of the Temple or Squamous-bone plac'd on the *Os Sincipitis*.

H, C, The other Side Sutur'd with the *Os Cuneiforme*.

Fig. 6.

The Internal Face of the *Os Squamosum* next the Brain.

A, The Process of the Temple-bone, and may be call'd *Processus Petrosus*, as well from its Appearance as Compactness; wherefore the Whole Temple-bone is by some call'd *Petrosum*. In this Process are contain'd all the Internal Organs of Hearing between A and C: As the *Membrana Tympani*, the *Tympanum*, the *Musculus Obliquus*, the *Musculus Internus* and *Musculus Stapidis*; the *Incus*, *Malleus*, *Stapis* and *Osticulum Quatum*; the *Meatus à Palato ad Aurem*; the *Foramen Ovale* and *Rotundum*; the Labyrinth and its *Vestibulum*; Three Semicircular Ducts, and the *Cochlea*, together with its *Lamina Spiralis*, and the Expansion of the Auditory Nerve within the Labyrinth and *Cochlea*.

B B, That Part of the *Os Squamosum* which cleav'd to the Bone of the *Sinciput*.

d, The *Foramen* by which the Auditory Nerve Enters the *Os Petrosum*, in its Way towards the Labyrinth and *Cochlea*.

Having already said something of the *Meatus Auditorius* and the Membrane which Invests it; the Order of Parts would require our next Examination of the *Membrana Tympani*, and the Muscles within the Cavity of the *Tympanum*, &c. but the succeeding Figures Representing the Four Little Bones of the Labyrinth, *Cochlea*, and their *Foramina* only; we must Prosecute the Order set before us, and refer to our *Appendix* to what properly belongs to this Place. (*Viz.*) The Muscles of the Internal Ear and *Membrana Tympani*.

Fig. 7.

The Labyrinth of the Left Ear of a *Fœtus*.

A, B, C C, The Three Semicircular Ducts Clear'd of the Membranes and Part of the *Os Petrosum*; in which Bone they are entirely Inclos'd in the Adult, and no Marks of their Tracts Appear, as in the *Fœtus*.

D, That Part of the *Os Petrosum* in which the *Cochlea* is contain'd, Part of which is here Expresst, Broken up.

Fig. 8.

The Labyrinth and *Cochlea* of the Left Ear.

A, B, C, The Three Semicircular Ducts whose Cavities are Invested with a Membrane, in which the Auditory Nerve is Expanded: The Extremities of these Ducts Open into the *Vestibulum* of the Labyrinth, or Cavity immediately within the *Foramen Ovale*, Figur'd in our *Appendix*: One of the Spiral Ducts of the *Cochlea* also Opens into the *Vestibulum*.

D, Part of the *Cochlea* Open'd, which consists of Two Spiral Ducts, or One Duct Divided by a Bony *Septum*; which from its Figure is call'd *Lamina Spiralis*: One of these Ducts (as above Noted) Opens into the *Vestibulum* of the Labyrinth, at its *Basis*; the other in like Manner Ends its *Basis* at the Membrane within the *Foramen Rotundum*. The Auditory Nerve is Expanded in like Manner in the *Cochlea*, as in the Labyrinth.

Fig. 9.

The Four Little Bones of the Ear contain'd in the *Tympanum*, taken out, and Represented in their Proper Articulations with each other.

A, The *Malleolus*, the Depress't Head of which, is receiv'd in the Shallow Cavity of the *Incus*.

B, The *Incus*, Articulated with the *Stapes* by the Mediation of the *Os Orbiculare*.

C, The *Stapes*.

.... D, The *Os Orbiculare* or Fourth Bone of the *Tympanum*.

These Bones we shall Figure *in Situ* in our *Appendix*.

Fig. 10.

The *Malleolus* taken from the rest of the Little Bones of the Ear, with Parts of Two of its Muscles remaining to it.

A, . , The Roundish Depress't Head of the *Malleolus*.

B ..., A Ligament which Connects the Head of the *Malleolus* to the *Incus*.

C, The Neck of the *Malleolus*.

D D, The Two Process's of the *Malleus*, in which the External and Internal Muscles are Inserted: Besides these Process's, its Long Production call'd the *Manubrium* or Handle of the *Malleus*, is Remarkable, which Adheres to the Inside of the *Membrana Tympani*.

Fig. 11.

The *Incus* in whose Lower-part (as its here Figur'd) is a Shallow Depressure which receives the Roundish Head of the *Malleus*: Its Two Process's are here well Expresst; of which the Shortest rests in a *Sinus* of the *Os Petrosum*, within the *Tympanum*; but the Longer is Articulated with the *Stapes*, by the Mediation of the *Os Orbiculare*.

Fig. 12.

The *Stapes* so call'd from its Figure, whose *Basis* Rests on the Margin of the *Fenestra Ovalis*, as is here Expresst, and the *Os Orbiculare* lying under it; which Latter is Delineated somewhat bigger than the Life.

THE

NINETY-FIRST TABLE.

Fig. 1.

SHEWS the External Convex Surface of the Upper-part of the Skull, and its Proper Sutures, Elegantly Expreſt.

A, B, The Forehead-bone, by ſome call'd *Os Coronale*, *Inverecundum*, and *Os Puppis*.

C, The *Os Sincipitis* or *Verticis*, by ſome call'd *Bregma*, either from the ſoft moiſt Brain lying under it, or from its thin moiſt Conſtitution in Infants, and ſometimes in the Adult.

D, Part of the *Os Occipitis*, by ſome call'd *Baſillare*, *Os Proræ*, *Os Memoriæ* and *Os Pyxidis*.

E E, The Coronal Suture.

F, The Sagittal Suture or *Sutura Longitudinalis*.

G G, The *Sutura Lambdoides*.

Tho' the Sutures here Expreſt are Regular according to their Common Appearance, yet in divers Subjects we find Nature ſport very conſiderably; ſometimes the Longitudinal Suture is Double, at other times it paſſes Obliquely towards the Coronal Suture, and in ſome Subjects it Frames an *Os Triquetrum* at its Conjunction with the Coronal Suture, or elſe divers ſmall Bones of Various Figures; the like may be ſometimes Obſerv'd in the *Sutura Lambdoides*, as alſo in the Coronal Suture; of which Latter, the Figure here gives a Specimen on the Right Side.

Fig. 2.

The Internal Concave Surface of the Upper-part of the Skull when Saw'd from its *Baſis*.

A A, The Inſide of the *Oſſa Bregmatis*.

B B B, The Sutures as they Appear withinſide the Skull Approaching to a ſimple ſtraight Line, which Conjunction of Bones is call'd *Harmonia*.

C, The Internal Part of the *Os Frontis*.

E, A Portion of the Inſide of the *Os Occipitis*.

F F, The Channels Fram'd by the Blood-Veſſels of the *Dura Mater*: Theſe Inſculptures or Furrows of the Bone, I found very Large in the Skull of a Perſon I lately Diſſected, who Died Apoplectick, in whom the Blood-Veſſels of the *Dura Mater* were proportionably Augmented to the Magnitude of a Gooſe-Quill. In this Subject divers Large *Foveæ* Appear'd in the Skull, breaking out as it were from the Impreſſion of the Longitudinal *Sinus*; One of which *Foveæ* exceeded Half an Inch in its Diameter. When the Top of the *Cranium* was oppos'd to the Light, the *Foveæ* above mention'd, as well as the Large Furrows of the Veſſels Appear'd Tranſparent, not unlike the Horn commonly made Uſe of in Lanterns; nor indeed did the Thickneſs of the Skull in thoſe Parts much exceed it: By this, we may be Inform'd with what Caution we ought to Uſe the *Trepan* in Perforating the Skull, eſpecially near the Longitudinal Suture, as alſo Laterally on the *Bregma*, where thoſe Veſſels uſually take their Courſe; and that more eſpecially when the Patient has ſuffer'd under Habitual Head-Aches, which was Remarkable in the Perſon laſt mention'd, even from his Infancy; for doubtleſs theſe Cavities and Furrows have an early Date, from an Irregular Formation of the Blood-Veſſels; whence the Refluent Blood is Subject to be Retarded, and the Neighbouring Parts as the *Pericranium*, &c. ſuffer Tenſion and Pain.

B *Superior* and E, The Channel or Impreſſion which the Longitudinal *Sinus* makes in the Middle and Upper-part of the Skull, according to the Length of the Sagittal Suture.

Fig. 1.

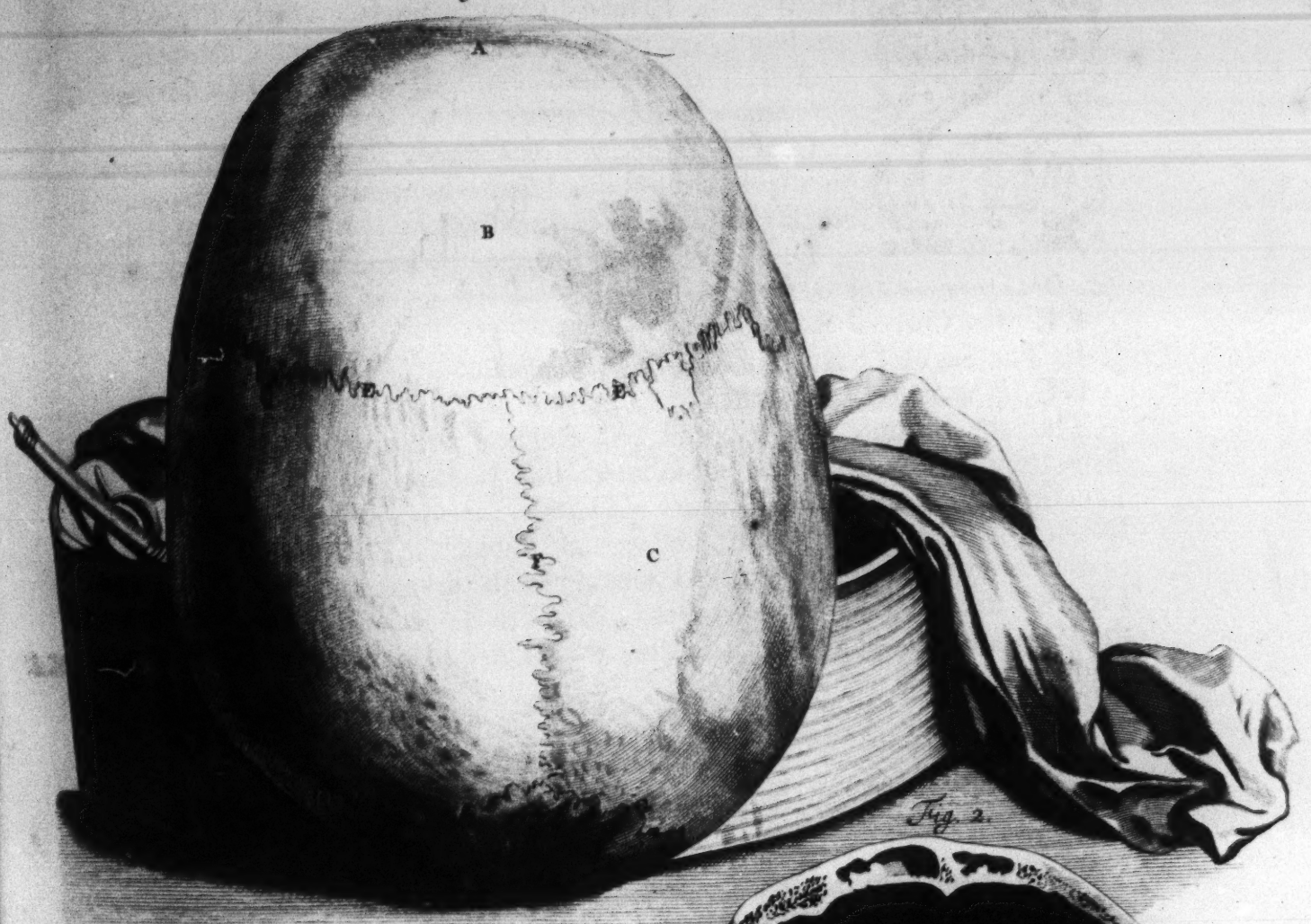


Fig. 2.

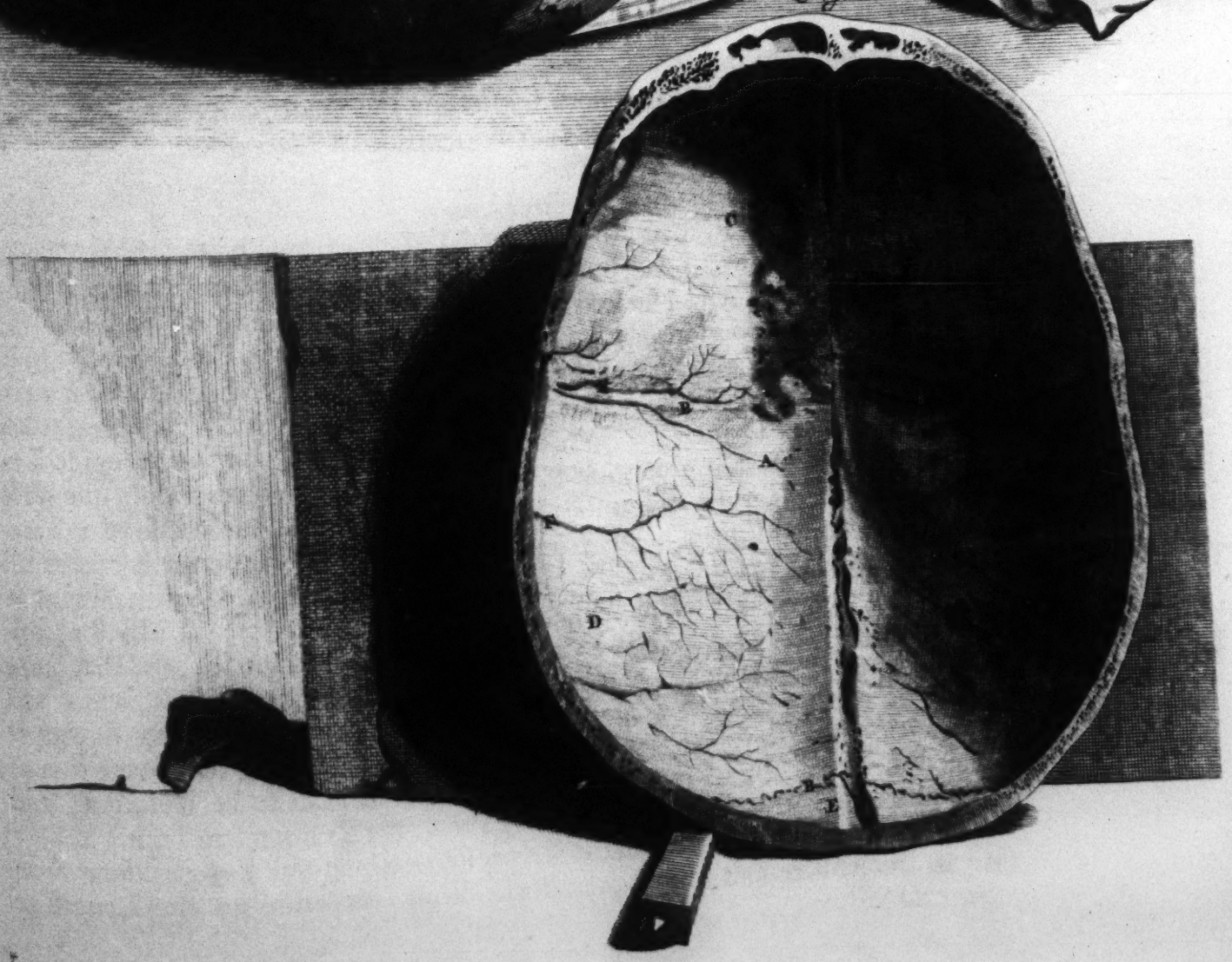


Fig. 4.

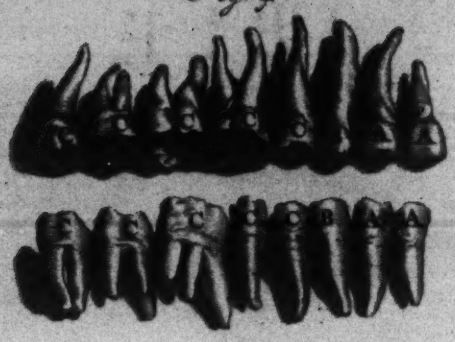


Fig. 1.

Fig. 6.

Fig. 7.

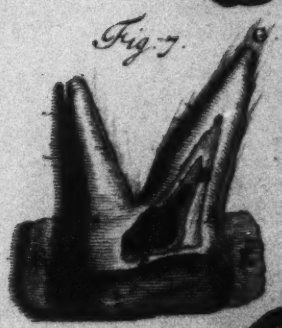


Fig. 2.

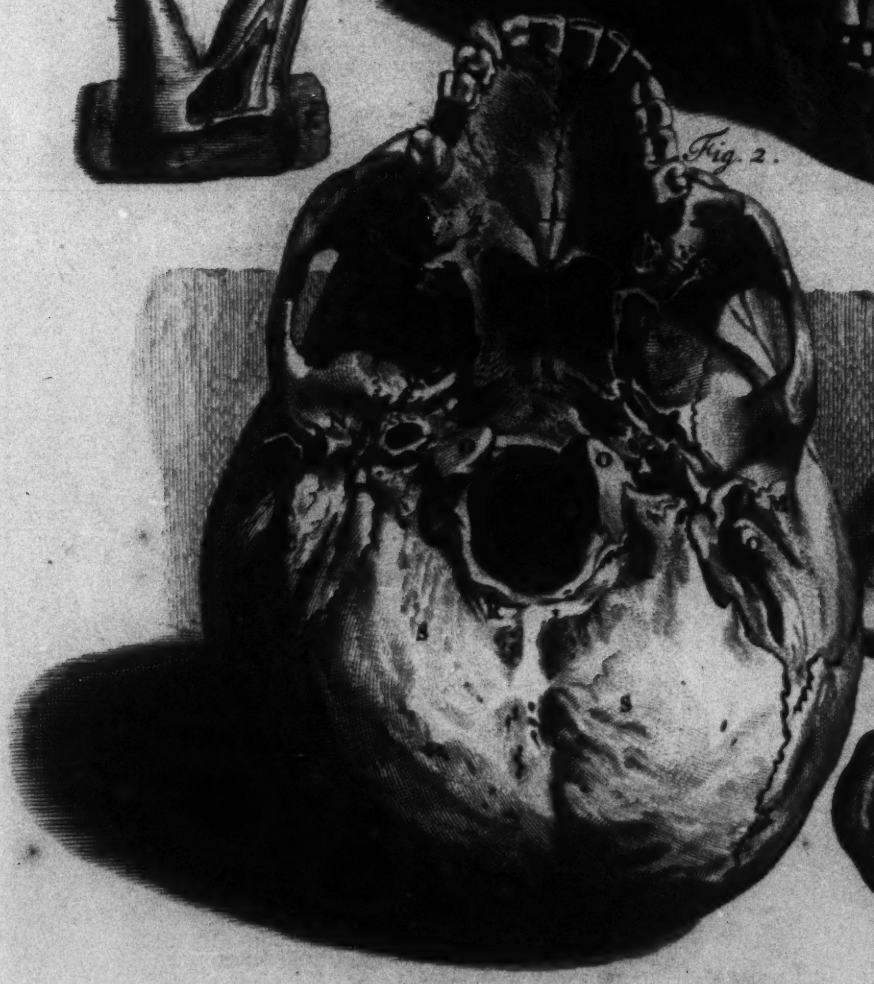


Fig. 3.

Fig. 9.

Fig. 8.

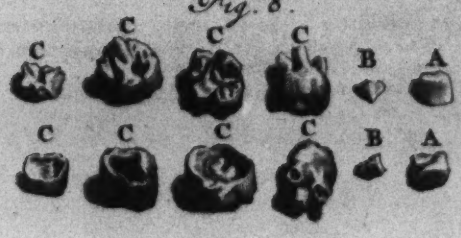
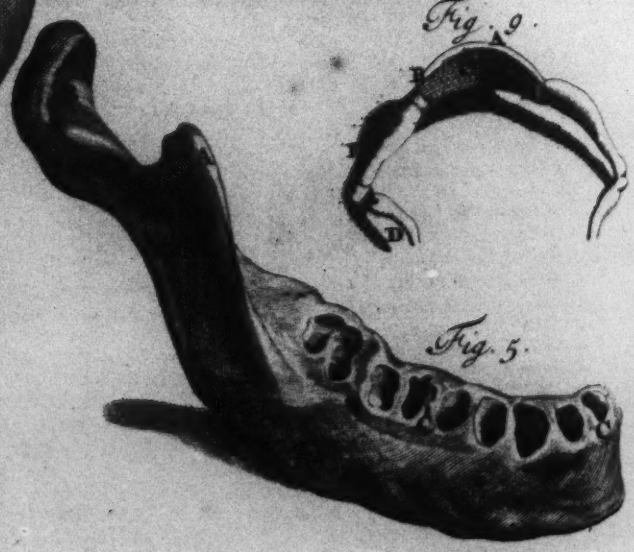


Fig. 5.



THE
NINETY-SECOND TABLE.

Fig. 1.

SHEWS the Fore-part of the Skull, in which Part of the Proper Bones of the Skull already Deſcrib'd, and divers of thoſe of the Upper Jaw and the Bones of the Lower Jaw, are well Expreſt.

A, B, C, The Firſt Bone of the Upper Jaw, conſtituting the Inferior Part of the Orbit of the Eye, and Part of its Leſſer *Canthus*, together with Part of the *Os Jugale* and Cheek: B, That Part of it which Compoſes Part of the *Os Jugale*.

D, The Second Bone of the Upper Jaw, which may be call'd *Os Lachrymale*, becauſe the *Ductus* Ariſing from the Two *Puncta Lachrymalia*, paſſes thro' it into the *Foramina* of the Noſtril on that Side, together with a Branch of the Fourth Pair of Nerves, and ſome Remarkable Blood-Veſſels.

Anatomiſts diſagree in their Deſcriptions and Number of the Bones of the Upper Jaw; *Galen in Libel. de Oſſib.* reckons XI. *De Partium Uſu* IX. *In Introductorio ſive Medico Galeno Adſcripto* XII. to which Latter *Veſalius* Subſcribes; but *Columbus* mentions XIII. and at the ſame time in his Deſcription, omits the Third Pair of *Veſalius* and Others, and inſtead of them adds Two others, or another Pair call'd *Oſſa Spongioſa*, plac'd within the Noſtrils: We can't but agree with *Veſalius's* Deſcription, being ſo very clear and intelligible by the Appearance of moſt, if not all Skulls; nor can we find any Reaſon to omit what *Columbus* has added, ſo that the Bones of the Upper Jaw are XV in Number; viz. the VI. Pair of *Veſalius*, the Two *Oſſa Spongioſa* and *Septum Narium* of *Columbus*, by him call'd *Vomer*, from the likeneſs it has to a Plow-Share or Coulter.

The Third Bone of the Upper Jaw is ſcarcely Expreſt in this Figure, or in that of *Tab.* 89. *Fig.* 1. by reaſon of the Foreſhorten'd Site (as Painters Term it) it's in, in this Poſition of the *Cranium*: This Third Bone of the Upper Jaw is commonly of a Quadrangular Figure and very Thin, plac'd within the Orbit: The preciſe Place of its Situation is Forewards, adjoining to the Second Bone of the Upper Jaw, or *Os Lachrymale*; Backwards it ſometimes Touches the *Os Cuneiforme* at One Angle only; Above it's Sutur'd with the *Os Frontis*; Below with the Fourth Bone of the Upper Jaw.

E, The Fourth Bone of the Upper Jaw, which is the Largeſt of all the Bones of the Jaw, Compoſing the Lower-part of the Orbit, the greateſt Part of the Palate, and containing all the Upper Teeth in its Sockets; its Upper-part is join'd to the Lower-part of the Forehead-bone, the Bone of the Noſe, and Second Bone of the Upper Jaw; Laterally to the Firſt Bone of the Upper Jaw; Backward to the Third, and *Os Cuneiforme*, and Laſtly to its Fellow: The Large *Foramen* of it (here Expreſt immediately under the Orbit of the Eye) ſerves to Tranſmit a Branch of the Fifth Pair of Nerves to the Muſcles of the Lips, *&c.* The Second, Third, Fourth and Fifth *Foramina*, are in Common with it and other Bones; of theſe, the Firſt is Compos'd at its Conjunction with the *Os Lachrymale*; (D) the Second with the *Os Cuneiforme*; (I) the Third at its Conjunction with its Partner near the *Dentes Incifores* Fig. 2. G; and the Fourth at its Conjunction with the *Os Palati* (Ibid. Fig. 2. h h) Backwards: It has a Large Cavity which Opens into the *Foramen* of the Noſe; in the Lower-part of which Aperture the *Os Spongioſum*, mention'd by *Realdus Columbus*, is plac'd: This Cavity is call'd *Antrum Maxillæ Superioris*; by ſome call'd *Antrum Highmorianum*, for what reaſon I know not, ſince 'twas Deſcrib'd long before Dr. *Highmore*, as Appears by *Veſalius*, *Columbus*, *Bauhinus*, &c.

F, The Fifth Bone of the Upper Jaw, which with its Partner Compoſes the Upper Bony Part of the Noſe, its Sutures or Conjunctions with the other Neighbouring Bones and Figure are here ſo well Expreſt, that it needs no other Deſcription.

G, The *Septum Narium* whoſe Bony Fore-part here Expreſt, is Compos'd partly by the *Os Cribriforme*, and partly by a Proceſs of the Fourth Bone of the Upper Jaw.

H, The Sixth Bone of the Upper Jaw or *Os Spongioſum*; this and its Partner are mention'd by *Columbus*, and call'd *Spongioſa*: Theſe we have conſtantly obſerv'd to be Diſtinct Bones in Humane Skulls, as well as in thoſe of Quadrupedes; in which Latter, theſe *Oſſa Spongioſa* have a very Remarkable Diſpoſition; they being Broad, Thin, Bony Bodies, Rol'd up very much like a Piece of Paper, Expreſt *Tab.* 61. *Fig.* 2. D D: Nor is this Involuted Diſpoſition of theſe Bones only in Quadrupedes, but in Humane Bodies alſo it's ſo Diſpos'd (tho' not ſo much Turn'd in) and Cover'd every where with the Pituitary Membrane, which Inveſts the Inſide of the *Foramina Narium*; on which the Branches of the Olfactory Nerves are Expanded.

I, A Chink or *Foramen* Compos'd by the *Os Cuneiforme*, together with the Fourth Bone, and Part of the Firſt Bone of the Upper Jaw; commonly call'd the Fourth *Foramen* of the *Os Sphenoides*, or the Third *Foramen* of the Fourth Bone of the Upper Jaw.

K, The *Os Frontis*.

L, Part of the Left *Bregma*.

M, The *Os Squamoſum* or *Temporale*.

Fig. 2.

The Inferior Surface of the *Baſis* of the Skull.

A, The *Os Occipitis*.

B, Part of the *Bregma*.

C, That Part of the *Os Temporale* call'd *Proceſſus Mammillaris*.

D, The *Os Jugale* Compos'd of a Proceſs of the *Os Temporum* and Firſt Bone of the Upper Jaw.

E, The Four *Dentes Inciſores*.

F *Inferior*, The Eight *Dentes Molares*, Four on each Side. The reſt are the Two *Dentes Canini*.

G, The Fourth *Foramen* of the Fourth Bone of the Upper Jaw.

G, F, The Lower-part of the Fourth Bone of the Upper Jaw next the Palate, by ſome therefore call'd *Os Palati*.

H, The Seventh Pair of Bones of the Upper Jaw, call'd *Oſſa Palati*; theſe Bones are Perforated on each Side (h h) near the *Dentes Molares*; which Perforation is in Common with the Fourth Bone of the Upper Jaw, and is call'd the Fifth Perforation of that Bone, as above mention'd. Theſe Seven Pair of Bones of the Upper Jaw make Fourteen on each Side, to which *Realdus Columbus* adds another which has no Partner, and is reckon'd the Fifteenth Bone of the Upper Jaw.

I, The Fifteenth Bone of the Upper Jaw, by *Columbus* liken'd to a Coulter or Plow-Share, making the Back-part of the *Septum Narium*.

K, The *Proceſſus Pterygoides* or *Aliformis*, reckon'd the Firſt of the External Proceſs's of the *Os Sphenoides*.

The *Muſculus Pterigoideus Internus*, Ariſes from the Internal Part of the *Sinus* of theſe Proceſs's, *Vid. App.* Fig. 8. g.

L, The Lower-part of the *Proceſſus*, or *Appendix Styloides*; its Upper-part being Broken off on both Sides in this Figure.

M, The Margin of the *Meatus Auditorius* in the *Os Temporale* of the Left Side.

N, The *Sinus* of the *Os Petroſum* or *Temporale*, which receives the Head of the Long Proceſs of the Lower Jaw.

O O, Two Proceſs's of the *Os Occipitis* Articulated with the Firſt *Vertebra* of the Neck.

P, The Anterior *Appendix* or Proceſs of the *Os Occipitis*; by *Veſlingius* in his Animadverſions on his Figures of Chap. XIII. Erroneouſly call'd *Os Sphenoides*.

Q, The *Proceſſus Mammiformis* or *Maſtoides* of the *Os Temporum*, on the Left Side.

R R R, The Great *Foramen* of the *Os Occipitis*, by which the *Medulla Oblongata* paſſes out of the Skull.

S S, The Aſperities and *Sinus's* of the Bones of the *Occiput*, made by the Inſertions of the Muſcles Moving the Head.

T T, The Internal Parts of the Firſt Bones of the Upper Jaw.

V V, The Fourth *Foramen* of the *Os Cuneiforme*; Vid. Fig. 1. I.

W, Part of the *Os Cuneiforme* next the Aliform Proceſs.

X X, The Fifth *Foramen* of the *Os Cuneiforme*, Compos'd at the Meeting of that Bone with the *Os Petroſum*, and Fore-part of the Occipital-bone on both Sides.

Y, The Sixth *Foramen* of the *Os Cuneiforme* at the Root of the *Proceſſus Pterygoides*, by which a Branch of the Fifth Pair of Nerves paſs out of the Skull.

Z Z, The *Foramina* of the *Oſſa Temporum*, by which the Carotid Arteries Firſt Enter the *Baſis* of the Skull.

Fig. 3.

The Inferior Part of the Lower Jaw.

a, The Internal Part of the Lower Jaw, whence the *Muſculus Mylohyoideus* do's Ariſe.

b, A Large *Foramen* in the Internal Part of the Lower Jaw, by which the Blood-Veſſels and a Branch of the Fifth Pair of Nerves paſs to the Teeth, *Fig.* 1. b. The External *Foramina* of this Bone, by which the Branches of thoſe Veſſels paſs out of the Bone again to the Muſcles of the Lips.

C, A Fore-ſhorten'd Appearance of the *Proceſſus Coronæ* of the Lower Jaw, call'd the Short Proceſs.

D E, The Head of the Long Proceſs of the Lower Jaw call'd *Condylus*, which is Articulated with the *Os Temporum* by the Mediation of a Moving Cartilage; *Vid. App.* Fig. 8. T, S.

F, The *Cervix* or Neck of the Long Proceſs of the Lower Jaw.

Fig. 4.

The Teeth of the Upper and Lower Jaw of one Side only, when taken out of their *Alveoli* or Sockets.

A A, *&c.* The *Dentes Inciſores*;

B B, The *Canini*;

C C, *&c.* The *Molares*.

Fig. 5.

The Right Side of the Lower Jaw in which the *Alveoli* or Sockets, after the Extraction of the Teeth, are Repreſented.

A, The *Proceſſus Coronæ*, to which the Temporal Muſcle is fixt.

B, The *Proceſſus Condylus*.

C C, The *Alveoli* or Sockets of the Teeth.

Fig. 6.

A A, *&c.* Divers Teeth Broken or Divided Variouſly, to ſhew their Internal Cavities or *Sinus's*.

Fig. 7.

One of the Grinding Teeth in like Manner Broken to Exhibit its Internal Structure, Figur'd much Bigger than the Life.

A, The External Stony Part.

B, The Bony *Striæ* of the Tooth Diveſted of its Stony *Cortex*.

C, The Internal Bony Part of the Tooth becoming more Porous, as it Approaches its Middle Cavity.

D, The Middle Cavity or Hollow of the Tooth, Cover'd with a Membrane on which the Blood-Veſſels and Nerves of the Tooth are Diſtributed; by which the Tooth derives the Matter which makes it Germinate and repair that loſs it ſuſtains by frequent Uſe on its Cortical or Stony Part: Thus when one Tooth is wanting in either Jaw, the Oppoſite Tooth Grows Longer for want of its Reliſtance in Maſtication. When this Internal Membrane within the Cavity of the Tooth is Expos'd thro' the Breaking away of the Upper-part of the Tooth, it is moſt Exquiſitely ſenſible to the Touch of any hard Body, or cold Liquor; and very frequently a Carnous *Fungus* will Ariſe from it; In theſe Caſes the drawing out of the Tooth is the beſt Remedy.

E, The External Membrane lying on that Part of the Tooth within the Socket or *Alveolus*: They who Doubt of the Exiſtence of ſuch a Membrane may be ſatisfied therein; After a Tooth is drawn from a Living or lately Dead Body, and laid in Water for ſome Days, this Membrane will be very Conſpicuous even to the Naked Eye.

F, The *Baſis* of the Tooth;

G, The *Apex* of one of its Roots where the Blood-Veſſels Ariſing from the *Parietes* of the *Alveolus* or Socket, are Expreſt, Running into that Part of it which lies within the *Alveolus*.

Fig. 8.

The Stony Parts of the Teeth of a *Fœtus*, which lying within the Jaw-bones, are Cover'd with the *Perioſtium*, as Appear'd in the Diſſection I ſometime ſince made of a Humane *Fœtus*; *Vid. Tab.* 101. L L.

A A, The Stony *Capſula* of one of the *Dentes Inciſores*.

B B, That of the *Caninus*.

C C, *&c.* The Superior Stony Parts of the *Dentes Molares* in a *Fœtus*.

Fig. 9.

The *Os Hyoides* or Bone of the Tongue, together with Two Proceſs's of the Scutiformal Cartilage.

A, The Middle Bone of the *Os Hyoides*,

B, Its Superior Part next the Tongue,

C, Its Internal Concave Part towards the *Fauces*,

D, Part of the Superior Long Proceſs of the Scutiformal Cartilage of the Left Side looſly Tied to the Extremity of the *Os Hyoides* of the ſame Side; that of the Right Side is not Letter'd in this Figure.

E, One of the Two Lateral Bones which Helps to Compoſe the *Os Hyoides*.

THE
NINETY-THIRD TABLE.

FROM the Bones of the Head, we Paſs to thoſe which Support it and the Trunk of of the Body. (*viz.*) The Bones of the Neck, Back, Loins, *Os Sacrum* and *Coccygis*; all theſe together have generally obtain'd the Name of *Spina*. Since it's Neceſſary the Head and Trunk of the Body ſhould be variouſly Mov'd, it was therefore Requiſite their Supporter ſhould not Conſiſt of One Bone only, but that it ſhould be Divided into many, which are call'd *Vertebræ*; of theſe, there are Reckon'd Twenty-four; (*viz.*) Seven of the Neck; Twelve of the Back, and Five of the Loins. In ſome Subjects we have Found but Six *Vertebræ* belonging to the Neck; in another we Found Thirteen of the *Thorax*, and as many Ribs; as Appears in a Skeleton now Hanging in the Middle of the Anatomical Theater of the Surgeons of *London*; The like I don't Doubt may, or has been Obſerv'd of the Loins: The Inferior Part of the Spine is Compos'd of the *Os Sacrum* and *Coccygis*.

Fig. 1.

The Inferior Part of the Firſt *Vertebra* of the Neck, call'd *Atlas*, becauſe it Supports the whole Head.

A, Its Fore-part:

B, Its Back-part, wanting a Spinal Proceſs:

CC, Its Tranſverſe Proceſſes Perforated to Tranſmit the Cervical Artery and Vein.

DD, Two Oval Proceſs's, whoſe Surfaces are Smooth and Cover'd with a Cartilage, which Proceſs's move to either Side on thoſe of *Fig.* 3. BB.

Fig. 2.

The Upper-part of the Firſt *Vertebra* of the Neck.

A, The Inſide of the Back-part of the Firſt *Vertebra* of the Neck next the *Medulla Spinalis*.

B, The Outſide and Fore-part of the ſame *Vertebra*:

CC, Two Proceſs's whoſe Two Shallow Cavities are Articulated with Two ſomewhat Convext Prominencies of the *Os Occipitis*, Tab. 92, Fig. 2. OO; in which Articulation the Head is Mov'd in Nodding Fore-wards, Back-wards and Side-ways.

D, A *Sinus* in the Upper-part of this *Vertebra*, in which the Contorted Trunk of One of the Cervical Artery, paſſes towards the Great *Foramen* of the *Os Occipitis*.

N.B. *It is Neceſſary the Great* Foramen *of this Firſt* Vertebra *of the Neck ſhould be much Larger than any of the Inferior, leaſt the Beginning of the* Medulla Spinalis *ſhould be Incommoded in Turning the Head to One Side; in which Action, this Firſt* Vertebra *Moves with the Head on the* Axis *or Tooth-like Proceſs of the Second* Vertebra *of the Neck.*

Fig. 3.

The Superior Part of the Second *Vertebra* of the Neck.

A, The Tooth-like Proceſs on the Fore-part of this Second *Vertebra* Inſerted behind the Fore-part of the Firſt *Vertebra* (A, B, *Fig.* 1, 2.) whoſe *Apex* A, is Faſtned by a Ligament to the Margin of the Fore-part of the Great *Foramen* of the *Os Occipitis*: *Vid. Appen.* Fig. 8. E.

BB, Two Proceſs's, whoſe Cartilaginous Surfaces are of an Oval Figure, and Correſpond to thoſe of *Fig.* 1. DD. whereby the Rotatory Motion of the Head is Perform'd. The other Remarkable Parts of this Figure may be known by the Explanation of the Following.

Fig. 4.

The Inferior Part of the Second *Vertebra* of the Neck:

A, The Tooth-like Proceſs call'd *Epiſtropheus*.

B, The Inferior Surface of the Fore-part of the Second *Vertebra*, join'd to the Superior and Fore-part of the Third. *Fig.* 5. C.

CC, Its Tranſverſe Proceſs's Perforated to Tranſmit the Blood-Veſſels, as in *Fig.* 1. CC.

DD, Its Two Oblique Deſcending Proceſs's plac'd on the Two Oblique Aſcending of *Fig.* 5. A.

E, The Internal Part of the Second *Vertebra* next the *Medulla Spinalis*.

F, The Double Spinal Proceſs, to which the Superior *Muſculi Interſpinales* are Inſerted.

Fig. 5.

The Superior Part of the Third *Vertebra* of the Neck.

A, One of its Oblique Aſcending Proceſs's.

B, Its Tranſverſe Proceſs Perforated like as in the Two Firſt *Vertebra*.

C, The Superior Part of the Body of the Third *Vertebra*, on which the Inferior Part of the Second is Plac'd.

N.B. *The Reſt of the Figure may be Underſtood by the Explanation of the Preceding.*

Fig. 6.

The Lower Part of the Third *Vertebra* of the Neck;

A, Its Oblique Deſcending Proceſs:

B, Its Tranſverſe Proceſs Perforated as above Noted.

Fig. 7.

The Superior Part of the Firſt *Vertebra* of the Back.

A, Its Tranſverſe Proceſs not Perforated like thoſe of the Neck.

B, Its Spinal Proceſs on the Back-part.

C, A Shallow Depreſſure on the Fore-part of the Tranſverſe Proceſs which Receives the Tubercle of the Firſt Rib. *Vid. Tab.* 94. *Fig.* 2. B.

D, One of the Oblique Aſcending Proceſs's, which Receives the Deſcending of the Laſt *Vertebra* of the Neck.

E, The *Sinus*, in which ſome of the Axillary Nerves paſs out of the *Specus* or Great *Foramen* of the *Vertebræ*.

Fig. 8.

The Inferior Part of the ſame Firſt *Vertebra* of the Back or *Thorax*:

A, Its Tranſverſe Proceſs:

B, Its Spinal Proceſs.

C, A Shallow Depreſſure in the Tranſverſe Proceſs, to which the Second Tubercle of the Firſt Rib is Connected:

D, Its Oblique Deſcending Proceſs, Receiv'd by the Aſcending of the Next *Vertebra*.

After Taking out the *Viſcera* from the Cavity of the *Thorax* of the Late *Earl* of *Peterborough*, I was Deſir'd by One of his Phyſicians Dr. *Johnſton* (who conſtantly Attended his Lordſhip ſome Time before his Death) to Examine the *Vertebræ* of the *Thorax*, becauſe his Lordſhip did not only Complain of very Great Pains about the Eighth and Ninth *Vertebræ* of that Part, and particularly the Right *Hypochondrium*, &c. but One of the Spinal Proceſs's of thoſe *Vertebræ* was Obſerv'd to be very Prominent ſome Weeks before his Death; nor could he Endure any Motion of the Trunk of his Body: Beſides at that Time the Lower Limbs were Deſtitute of Motion, as well as Exquiſite Senſe of Feeling. On Freeing the Deſcending Trunk of the *Arteria Magna* and *Ductus Thoracicus* from the Fore-parts of the *Vertebræ* of the *Thorax*, I Found a Tumor, whoſe Thick Hard Membrane was chiefly Fram'd of the Ligaments of the *Vertebræ*: I Divided the Tumor, and a Browniſh Colour'd Matter Flow'd from it: On farther Examination I Found the Upper and Fore-part of the Ninth, and in like Manner the Lower Part of the Eighth *Vertebræ* of the *Thorax* Conſum'd and Gone; inſomuch that I could without Difficulty put the Top of my Fore-finger into the *Foramen*, and Feel the *Medulla Spinalis* Cover'd with its Membranes only. I Doubt not but Part of the Matter contain'd in this Tumor, had Deſcended into the Lower-part of the *Specus* of the *Vertebræ* of the Loins and *Os Sacrum* (ſince it lay Open) whereby the Inferior Nervous Diſtributions were affected, and their Proper Office Perverted; but Decency Forbid our Scrutiny in this Caſe, ſince the Bodies of thoſe *Vertebræ* muſt have been Cut away with a Chizel to have made ſuch a Diſcovery.

Fig. 9.

The Upper-part of One of the *Vertebræ* of the Loins:

A, Its Tranſverſe Proceſs: The Reſt of its Parts may be known by the Explanation of the Fifth and Seventh Figures.

Fig. 10.

The Inferior Part of the ſame *Vertebra* of the Loins, whoſe Explanation may be Refer'd to *Fig.* 8.

Fig. 11, 12.

The Superior Parts of the Two Lower *Vertebræ* of the Loins;

AA, Their Tranverſe Proceſs's:

BB, Their Oblique Aſcending Proceſs's:

CC, The Bodies of the *Vertebræ*.

DD, Their Spinal Proceſs's.

THE

Fig. 5.

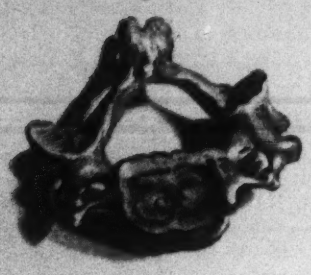
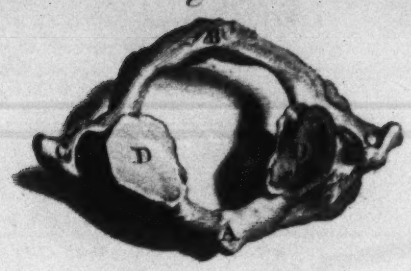


Fig. 3.

Fig. 1.



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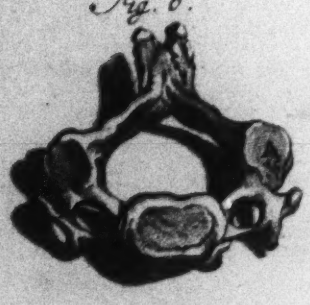

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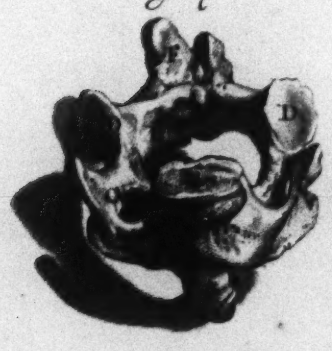

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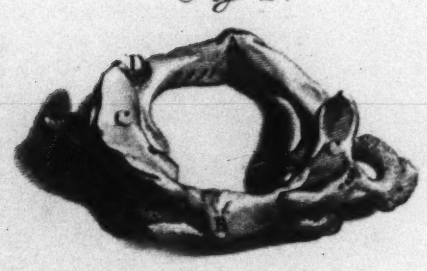

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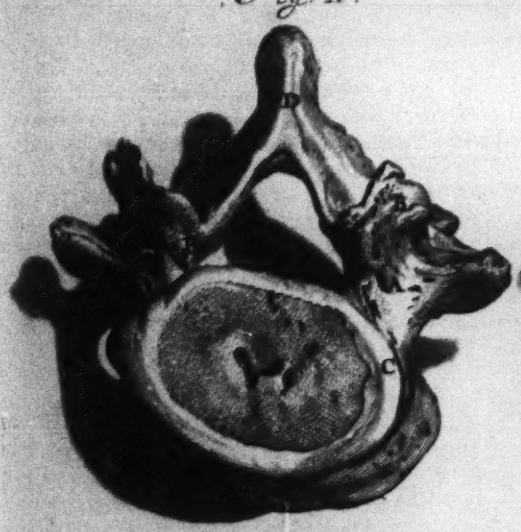

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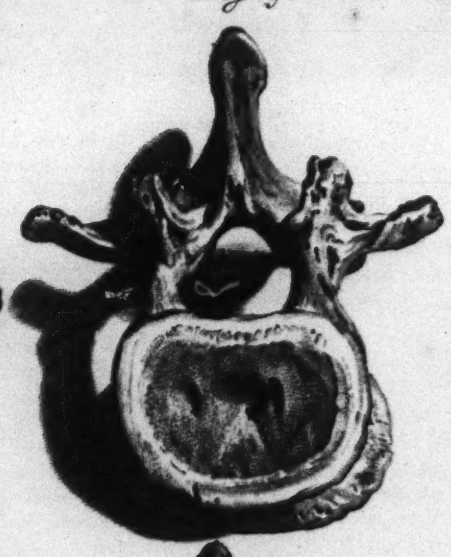

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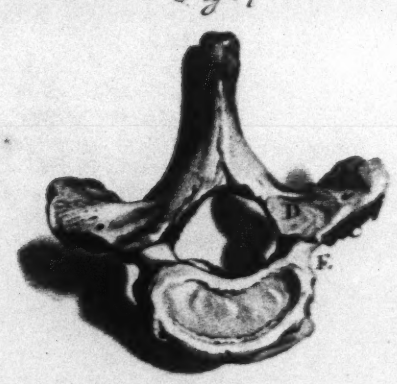
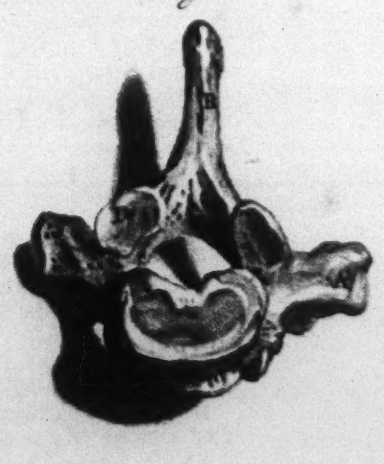


Fig. 8.



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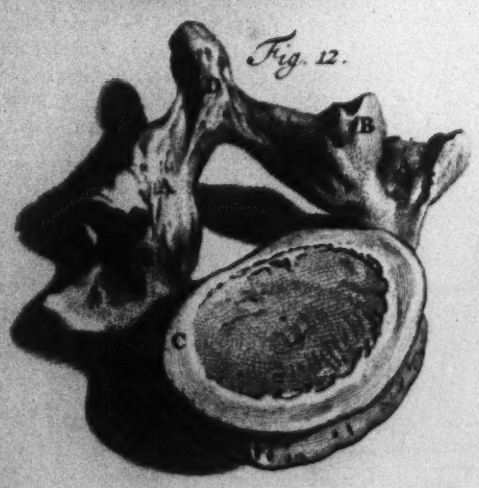

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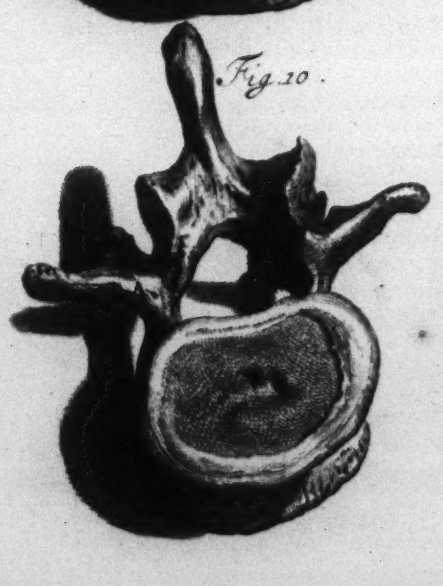


Fig. 2.

Fig. 1.

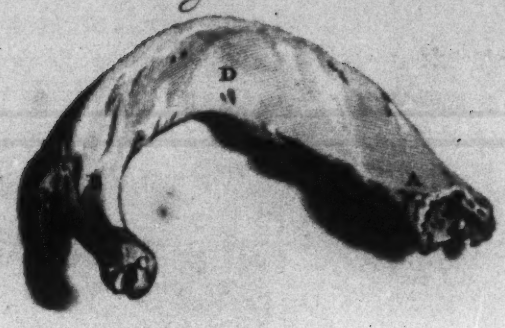


Fig. 3.

Fig. 4.

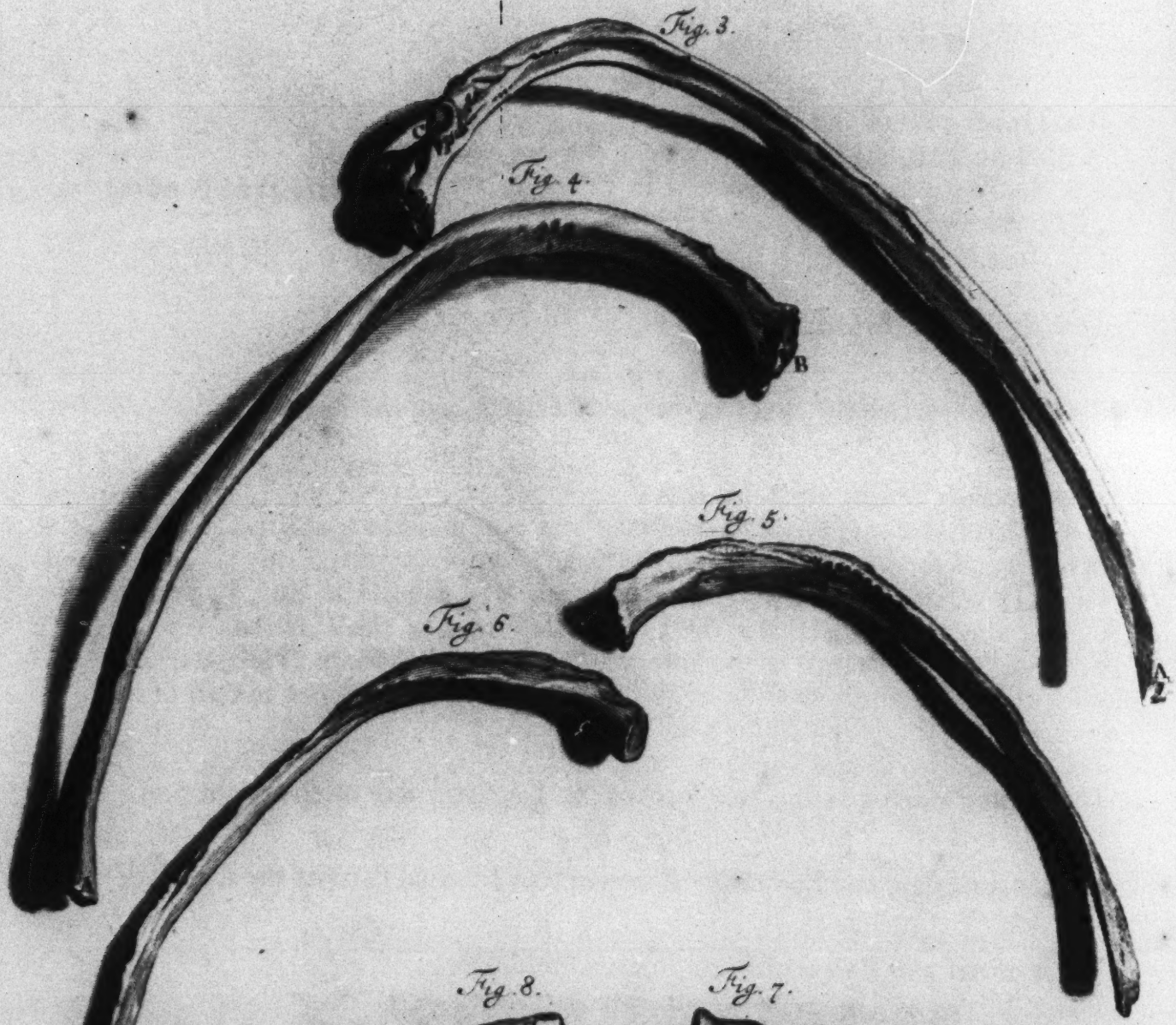


Fig. 5.

Fig. 6.

Fig. 8.

Fig. 7.

THE

NINETY-FOURTH TABLE.

THE Ribs are Twelve in Number on either Side; ſometimes we have found Thirteen, at other times but Eleven on each Side; and frequently Twelve on one Side and Eleven on the other: The Seven Superior are call'd, *The True Ribs*, which are join'd with the *Sternum* or *Os Pectoris*, by the Mediation of Cartilages. The Inferior Ribs are the *Nothæ*, *Spuriæ*, or Baſtard Ribs. The Nine Superior Ribs have a Twofold Articulation to the *Vertebræ* of the Back; the one Collateral to the Fore-parts of the Bodies of the *Vertebræ*; the other to the Fore-parts of their Tranſverſe Proceſs's. The Two and ſometimes Three Inferior Ribs, are only Articulated to the Bodies of the *Vertebræ*, and don't touch their Tranſverſe Proceſs's. The Loweſt and Laſt Rib has not its Cartilaginous Extremity Faſten'd to its Superior Rib, as the reſt of the Baſtard Ribs have, but its Extream Point gives an Origin to Part of the Oblique Deſcending Muſcle of the *Abdomen*.

Fig. 1.

The Inferior Part of the Firſt Rib of the Right Side.

Fig. 2.

The Upper-part of the ſame Rib.

A A, That Part of the Firſt Rib next the *Sternum*.

B B, Its Protuberance Articulated in a *Sinus* of the Tranſverſe Proceſs of the Firſt *Vertebra*.

C C, Its Little Head receiv'd in a *Sinus* of the Anterior Bodies of the Firſt *Vertebra*, Laterally.

D D, Its middle Broad Flat Part.

Fig. 3.

The Lower-part of the Sixth or Seventh True Rib of the Right Side.

Fig. 4.

The Superior Part of the ſame Rib.

A A, That Extremity of the Bony Part of the Rib join'd to the Cartilage, plac'd between it and the *Sternum*.

B B, The other Extremity Articulated to the *Vertebra* of the Back Laterally.

C, A Tubercle Articulated to the Tranſverſe Proceſs of the *Vertebra*.

E, *Fig.* 3. A *Sinus* Fram'd in the Inferior Part of the Rib for the Paſſage of the Blood-Veſſels, which ought to be avoided in Perforating the *Thorax*, in Caſe of an *Empyema*, &c.

Fig. 5.

The Lower Edge and Internal Part of the Eleventh Rib of the Right Side.

Fig. 6.

The Upper Edge, and Part of the External and Internal Parts of the ſame Rib.

Fig. 7, 8.

The Internal and External Parts of the Twelfth Rib.

THE

NINETY-FIFTH TABLE.

REPRESENTS the *Scapulæ*, *Claviculæ* and *Os Pectoris*, or *Sternum*.

Fig. 1.

The External Convext Part of the Læft *Scapula* or Shoulder-blade.

A B, The Outſide of the *Scapula* a little Arch'd or Convext.

C, The *Spina Scapulæ*;

D, Its Extremity call'd *Acromion*, Articulated to the Extremity of the *Clavicula*.

E, The *Proceſſus Coracoides* or Crow's-Bill-like Proceſs, by ſome call'd *Ancyroides* or Anchor-like.

F, The *Proceſſus Brevis*, or Short Proceſs of the Shoulder-blade which receives the Head of the Arm-bone.

The Reſt of the Parts which Circumſcribe the *Scapula*, are Explain'd in the following Figure.

Fig. 2.

The Internal Concave Part of the Right Shoulder-blade.

A B B, Various Eminencies on the Inſide of the *Scapula*, whence the Fibres of the *Muſculus Subſcapularis* take their Origin.

C, The Inferior Angle of the *Scapula*.

D, The Superior Angle of the *Scapula*.

E *Superior*, The *Proceſſus Coracoides*.

F F G, The *Foramina* for the Blood-Veſſels, which paſs in and out from the *Meditullium* of the Bone.

G *Inferior*, The *Sinus* of the Short Proceſs of the *Scapula*, in which the Head of the *Os Humeri* is receiv'd.

G *Superior*, The Internal or Lower Part of the *Acromion* of the *Scapula*.

H, The *Cervix* or Neck of the Short Proceſs.

N. B. *From* C *to* D, *is call'd the* Baſis Scapulæ; *From* D *to* F, *the* Coſta Superior; *From* H *to* C, *the* Coſta Inferior Scapulæ.

Fig. 3.

The Superior Part of the Right *Clavicula* or Channel-bone: Some call the *Claviculæ*, *Oſſa Humerorum*: They are alſo call'd *Furculæ*.

Fig. 4.

The Inferior Part of the Læft Clavicle.

A, That Part of the Clavicle Articulated to the Superior Part of the *Os Pectoris* or *Sternum*, in which Articulation a Cartilaginous Body is plac'd not Unlike that of the Lower Jaw with the *Os Temporum*. *Vid. App.* Fig. 8. S, T.

B, That Extremity of the *Clavicula* join'd to the *Acromion* of the *Scapula*, by Two almoſt Plain Cartilaginous Bodies appos'd to each other, and Connected by Ligaments: This Conjunction of the Clavicle with the *Acromion* of the Shoulder-blade we have more than Once ſeen ſuffer a Diſlocation: when the Patient has fallen from ſome High Place, and the Top of the Shoulder or *Acromion* of the *Scapula* has Firſt come to the Ground. The *Scapula* with the Arm in ſuch Caſe will be Depreſt, and the Outmoſt Extremity of the Clavicle will be ſeen to Ariſe up: This Diſlocation we Mention, becauſe we don't find it taken Notice of (or at leaſt not commonly) by Authors.

C, The Middle Superior and External Part of the Right *Clavicula*.

D, The Middle Inferiour and External Surface of the Left *Clavicula*. The Uſe of the *Claviculæ* is to ſupport the *Scapulæ*, together with the *Oſſa Humerorum*.

Fig. 5.

The External and Forepart of the *Os Pectoris* or *Sternum*, whoſe Appearance in the Adult Differs very much from that of the *Fœtus*; as may be ſeen *Tab.* 101. 6. In Aged Bodies it's intirely United into One Bone; in ſome Adults it's divided into Two; in others (as in this Subject) it has Three Diſtinct Bones.

A, The Superior and Largeſt Bone of the *Sternum*.

B, A *Sinus* which receives the Internal Round End of the *Clavicula*.

C, the Superior Part, or almoſt Semicircular *Sinus* of the *Sternum*.

D, The Middle Bone of the *Os Pectoris*.

E E E, The *Sinus's* in the Middle Bone of the *Sternum* Laterally; in which the Cartilaginous Extremities of the True Ribs are Receiv'd.

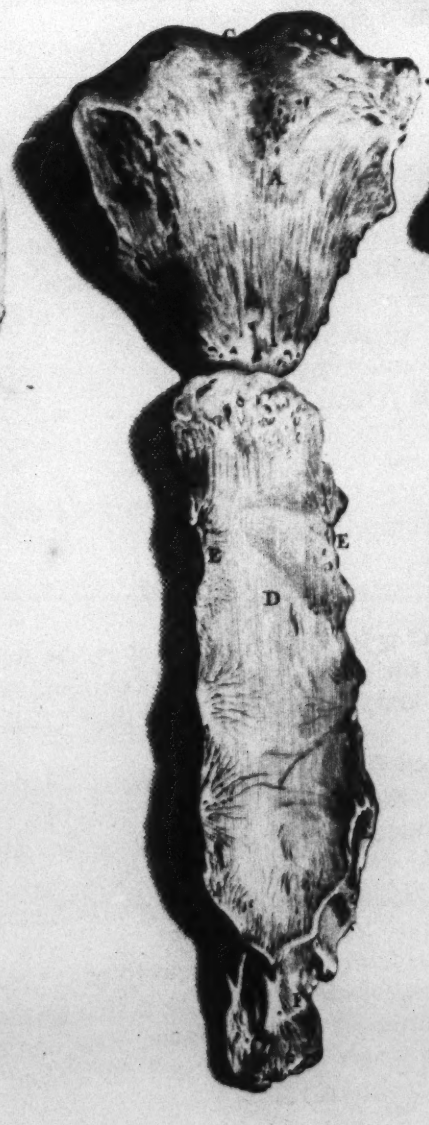
F, The Lower Bone of the *Sternum*; the Extremity of which is commonly Cartilaginous, and call'd *Cartilago Mucronata* or *Enſiformis*; Externally it Frames that Cavity call'd *Scrobiculus Cordis* or Heart-pit, commonly call'd the *Pit of the Stomach*: The Pains of which Part are call'd *Cardialgiæ*, they Affecting the Upper Orifice of the Stomach call'd *Cardia*, where the *Plexuſs's* of the Upper and Lower Stomach Nerves are made.

THE

Fig. 2.

Fig. 1.

Fig. 5.



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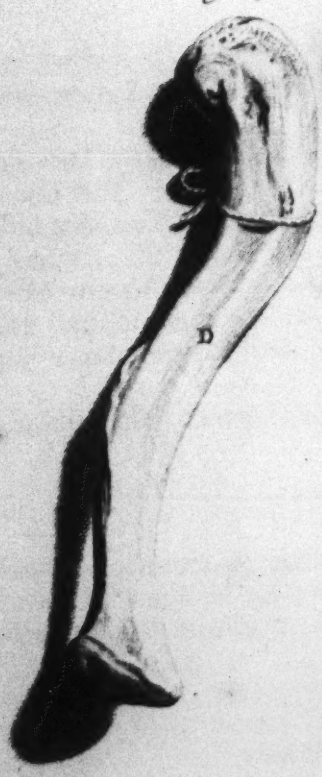

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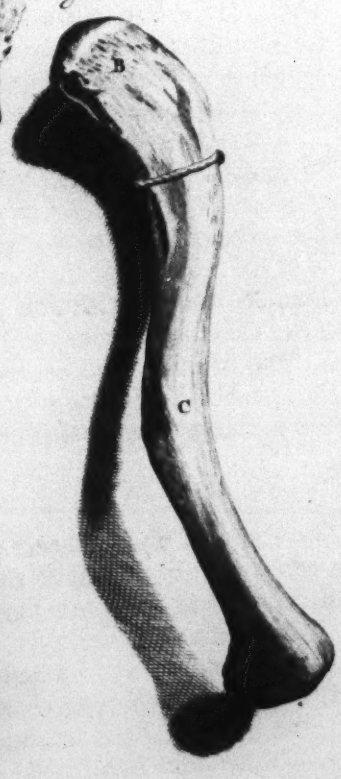

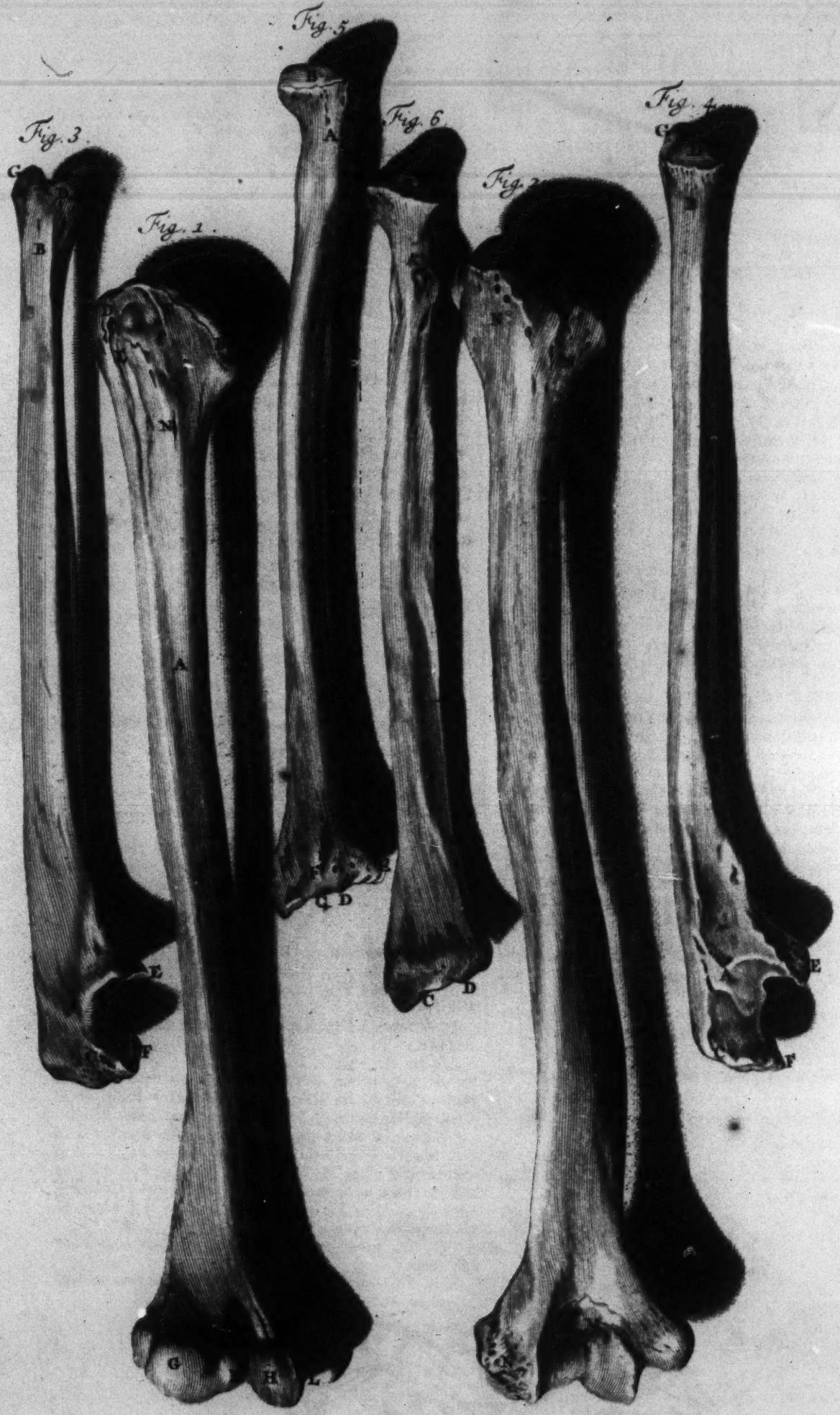
Fig. 5.
Fig. 3.
Fig. 6.
Fig. 4.
Fig. 1.
Fig. 2.
A
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THE
NINETY-SIXTH TABLE.

REPRESENTS the Bones of the Arms, together with the Two Bones of the Cubit: Theſe, together with thoſe which Compoſe the Hand Repreſented in the Following Table, are commonly call'd the Bones of the Whole Hand; but are properly Divided as above. Firſt of the Bone of the Arm, which is properly that Part between the Elbow or Cubit and Shoulder; the Whole Arm Comprehends the Bones of the Cubit.

Fig. 1.

A, The Fore-part of the *Os Humeri* of the Right Arm;

B, The Round Head of its Upper *Appendix* Cover'd with a Cartilage, which is Articulated with the *Scapula* by *Arthrodia.*

C, The Circular *Sinus* of the Upper-part of the *Os Humeri*, to which the Ligament Involving the Juncture, together with the Tendons of the *Muſculus Supraſpinatus*, *Infraſpinatus*, *Teres Minor* and *Subſcapularis* are Inſerted.

D F, Two Prominencies of the Shoulder-bone.

E, A *Sinus* Fram'd between the Two laſt Mention'd Prominencies, wherein the External Tendinous Beginning or Head of the *Muſculus Biceps* is Receiv'd. *Vid. Tab.* 65. I.

G, A Convext Protuberance of the Lower *Appendix* of the Shoulder-bone, which is Receiv'd in a Shallow Concave Depreſſure on the Superior Extremity of the *Radius.*

H K, That Part of the *Os Humeri*, that's Articulated to the Upper End of the *Ulna* by *Ginglymus.*

I, The Internal Protuberance of the *Os Humeri*, from which the Greateſt Part of the Muſcles Bending the Fingers and *Carpus*, together with the *Muſculus Pronator Radii Teres* and *Palmaris Longus*, do Ariſe.

L, An Interſtice between the Lower *Appendix* of the *Os Humeri* and its Internal Protuberance.

N, A Large *Foramen* for a Blood-veſſel of the Bone.

I was lately Call'd to a Boy about 10 or 12 Years of Age, who Four or Five Days before, in Playing with his Companion, Receiv'd ſuch an Injury in One of his Arms, as he could not afterwards Move it Forewards or Backwards, much leſs, Lift it up towards his Head; but had all the Actions of his Cubit and Fingers, as we commonly Find in thoſe who have Diſlocated the *Os Humeri* from the *Scapula*: After Examining the Shoulder, and Finding no ſuch Diſlocation; by Moving the Arm, I Found the Bone near the Shoulder Grate very much, which I Gueſs could be no otherwiſe than the Upper *Appendix* of the *Os Humeri* Divided from the Bone. I then Reduc'd it to a Good Figure, and after Applying a Plaiſter *De Sapone* to Attenuate the Extravaſed Blood, I Rol'd it up, and he has Continu'd Eaſie ever ſince. The Tingling, as he Told me, he had at his Fingers Ends, and Violent Pain in his Shoulder, Leaving him. I don't Find Authors Mention ſuch like Caſes where the Appendages of Bones are Broken off in Young Bodies; but I am Perſwaded from other Examples as well as this; ſuch Accidents often Happen, and are not commonly Known by Surgeons.

N. B. *Theſe Fractures of Bones at their Appendages in Young Bodies, are ſooner United, than when the Middle-parts of Bones are Broken.*

Fig. 2.

The Hinder-part of the Left Shoulder-bone.

M, A Cavity, in which the Superior and Back-part of the *Ulna* (*Fig.* 3,4. C F), call'd *Olecranon*, is Receiv'd in an Extenſion of the Cubit.

N N N, The *Foramina* for the Blood-Veſſels, which Paſs to and from the Marrow, and Internal Parts of the Bone.

Fig. 3.

The *Ulna* or *Os Cubiti* of the Right Arm:

A B, Its Internal Side, next the Trunk of the Body:

C, Its Superior Part or *Olecranon* Articulated with the *Os Humeri*:

D, Its Inferior Part, whoſe Lateral Smooth Surface is Receiv'd in a *Sinus*, at the Inferior Part of the *Radius* Laterally.

E F, The Semicircular *Sinus* of the *Ulna*, which Receives, and is Receiv'd by the Two Prominencies and *Sinus* of the Lower *Appendix* of the *Os Humeri*, (*Fig.* 1. K H,) which Articulation is call'd *Ginglymus.*

G, The Inferior and Leſſer Acute Proceſs of the *Ulna*, call'd *Styloides.*

Fig. 4.

That Side of the Left *Ulna* next the *Radius.*

A, An almoſt Semicircular *Sinus* of the *Ulna*, in which the Upper Head of the *Radius*, *Fig.* 5, 6. B B, is Receiv'd Laterally:

B C, Its External Side next the *Radius*; B, its Lower End next the *Carpus*; C, its Superior (call'd *Olecranum*) towards the *Os Humeri.*

D, A Smooth Prominence at the Lower End of the *Ulna*, which is Receiv'd in a *Sinus* of the *Radius*, as above-noted, *Fig.* 3. D.

E, The Anterior Proceſs of the *Ulna*, which Frames the Semicircular *Sinus*, Articulated with the *Os Humeri*, *Fig.* 1. K H. This Proceſs is Receiv'd in a *Sinus* at the Inferior and Fore-part of the *Os Humeri*, (Expreſt *Fig.* 1. above K H) when the Cubit is Bended.

F, The Superior and Poſterior Proceſs of the *Ulna* in like Manner, Framing its Upper and Semicircular *Sinus*, which Proceſs is Receiv'd in the Cavity (M, *Fig.* 2.) of the Inferior and Back-part of the *Os Humeri*, in an Extenſion of the Cubit.

G, Part of the Leſſer Sharp Proceſs of the *Ulna*, call'd *Stylohides.*

Fig. 5.

The Hinder-part of the *Radius* of the Left Cubit.

A, The Neck of the *Radius*:

B, Its Superior *Appendix*; in whoſe Upper Concave *Sinus*, (not Expreſt in this Figure) Receives the Convext Tubercle of the Inferor *Appendix* of the *Os Humeri*, *Fig.* 1. G.

C, D, The Inferior Part of the *Radius*, which is Articulated with the Bones of the *Carpus*, Expreſt, *Tab.* 97. *Fig.* 2.

E, A *Sinus* in the *Radius* Laterally which Receives the Inferior Head of the *Ulna*, *Fig.* 3, 4. D D.

F, Another *Sinus* on the Inferior Part of the *Radius*, in which the Tendon of the *Muſculus Extenſor Tertii Internodii Pollicis* and *Indicator*, is Entertain'd. *Vid. Tab.* 70. C, N.

Fig. 6.

The Fore-part of the Right *Radius*:

A, Its Tubercle a little Below its Neck, to which the Round Internal Tendon of the *Muſculus Biceps* is Inſerted. *Vid. Tab.* 65, I.

B, A Smooth Cartilaginous Outſide of the Superior Part or Head of the *Radius*; which is Receiv'd in an almoſt Semicircular *Sinus* of the Upper End of the *Ulna*, *Fig.* 4. A, By this Articulation of the *Radius* with the *Ulna*, the Former, *i. e.* the *Radius* is Render'd Capable of Turning on the *Ulna*, like as on an *Axis*, the *Ulna* at that Time Remaining Unmov'd; which Motion of the *Radius* together with the Hand, is Call'd either *Pronation* or *Supination*: *Pronation* is Perform'd when the Palm of the Hand is Turn'd Down and the Back of it is Uppermoſt; and on the Contrary, when the Palm is Turn'd Up and the Back is Undermoſt, it's Call'd *Supination.*

C D, The Lower-part of the *Radius* Articulated with the *Oſſa Carpi.*

N. B. *The* Foramina *of the Blood-Veſſels of the Bones are well Expreſt in this Table.*

THE

NINETY-SEVENTH TABLE.

DEMONSTRATES the Bones of the Hand properly ſo call'd.

Fig. 1.

The Internal Parts of the Bones of the Hand, next the Palm.

Theſe are Diſtinguiſh'd into Three Parts; *viz.* The *Carpus* or *Brachialis*, (1, 2, 3, 4, *&c.*) the *Metacarpus* or *Poſtbrachialis* (EEE); and the Fingers (FGHI); Firſt of the Bones of the *Carpus* or Wriſt: Theſe are Eight in Number, and Compos'd of Two Orders or Ranks of Bones; of which the Firſt Rank is commonly reckon'd to have Four 1, 2, 3, 4; the Two Firſt of theſe Bones jointly Compoſe a Smooth Convext Surface, Cover'd with a Cartilage which is receiv'd in a Shallow *Sinus* at the Inferior Part of the *Radius*, Tab. 96. Fig. 5, 6. CD; which Articulation is call'd *Arthrodia*: The Third Bone here Expreſt, do's not Help to Compoſe the Articulation of either Rank, but is Faſten'd on the Fourth by a Ligament, which Conjunction is call'd *Syndeſmoſis*; the Uſe of this Third Bone, is to Help to Support the Tranſverſe Ligament, under which the Tendons Bending the Fingers paſs: The Fourth Bone (plac'd between the Second and Eighth) do's not Compoſe either Rank, whether Articulated with the *Radius* or Metacarpal Bones, but is Inſerted between the Two Ranks: The Fifth Bone here Expreſt, is not properly to be reckon'd among thoſe of the Two Ranks, but like the Fourth is plac'd between them, and is Articulated to the Firſt Bone of the Thumb; which Articulation may be call'd *Synarthroſis*: The Sixth Bone here Expreſt, ought to be reckon'd the Seventh, the Sixth not being Expreſt in this Figure, but is Repreſented in *Fig.* 2. *: This may be properly reckon'd the Firſt of the Second Rank, to whoſe Lower Part the Metacarpal-bone of the Fore-Finger is Articulated: The Seventh Bone of the *Carpus* (here Sign'd the Sixth as above Noted) like the preceding, is Articulated with the Metacarpal-bone of the Middle-Finger, and may be properly Eſteem'd the Second Bone of the Second Rank or Order: The Eighth Bone of the *Carpus* (here Sign'd Seventh and Eighth) is the Third and Laſt Bone of the Second Rank: The Lower-parts of the Metacarpal-bones of the Little and Ring-Fingers, are Conjoin'd to this Eigth Bone of the *Carpus* by *Synarthroſis*: The Upper-parts of the Three Bones of the Second Rank laſt Treated of, (not unlike the Two Firſt of the Firſt Rank) do Conjunctly Frame a Convext Oblong Smooth Surface on their Upper-parts, which is receiv'd in a Concave fitted for it, fram'd by the Inferior Parts of the Two Firſt Bones of the Firſt Rank: This Articulation made by the Two Ranks of Bones of the *Carpus*, may alſo be call'd *Arthrodia*.

ABCD, The Four Bones of the *Metacarpus*, whoſe Upper-parts are Articulated to the Sixth, Seventh and Eighth Bones of the *Carpus* by *Synarthroſis*, and their Inferior Parts with the Bones of the Fingers, by *Arthrodia*.

EEE, The *Interſtitia* of the Metacarpal-bones, wherein the *Muſculi Inter-Oſſei* are plac'd; the Internal Parts of theſe Bones towards the Palm are Concave, as Appears in this Figure; but their External Parts towards the Back of the Hand are Convext, as is Repreſented by *Fig.* 2; the like may be Obſerv'd in the Bones of the Fingers and Thumb.

FFF, *&c.* The Firſt Internodes, or Bones of the Fingers and Thumb.

GG, The Second Internodes.

HHH, *&c.* The Third and laſt Internodes of the Bones of the Fingers and Thumb.

IIKK, The Articulations of the Bones of the Fingers with each other, and the Two laſt Bones of the Thumb, is by *Ginglymus*; but the Fingers are Articulated with the Metacarpal-bones by *Arthrodia*, as above Noted.

9, 10, 11, The *Oſſa Seſamoidea*; of which Ten are ſaid to belong to each Hand, *viz.* Two of the Thumb plac'd on the Inferior and Internal Part of its Firſt Bone F; the other Eight are in like Manner plac'd on the Inferior and Internal Parts of the *Oſſa Metacarpi*. In Young Bodies theſe Bones are not found, as in Others. They are apt to be loſt in Freeing the Bones, whether by Boyling or otherwiſe.

Fig. 2.

The Bones as they Appear on the Back-part of the Right Hand; for whoſe Explanation Conſult *Fig.* 1.

Fig. 3.

12, 13, 14, 15, 16, 17, 18, 19, The Bones of the *Carpus* Separated from each other.

THE

Fig. 1.

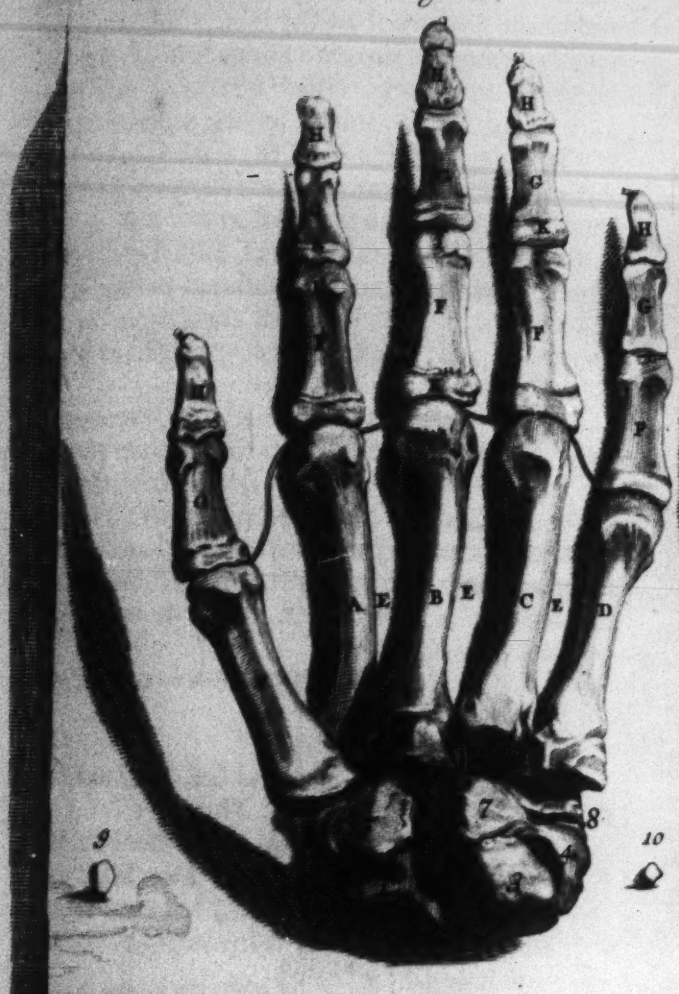


Fig. 2.

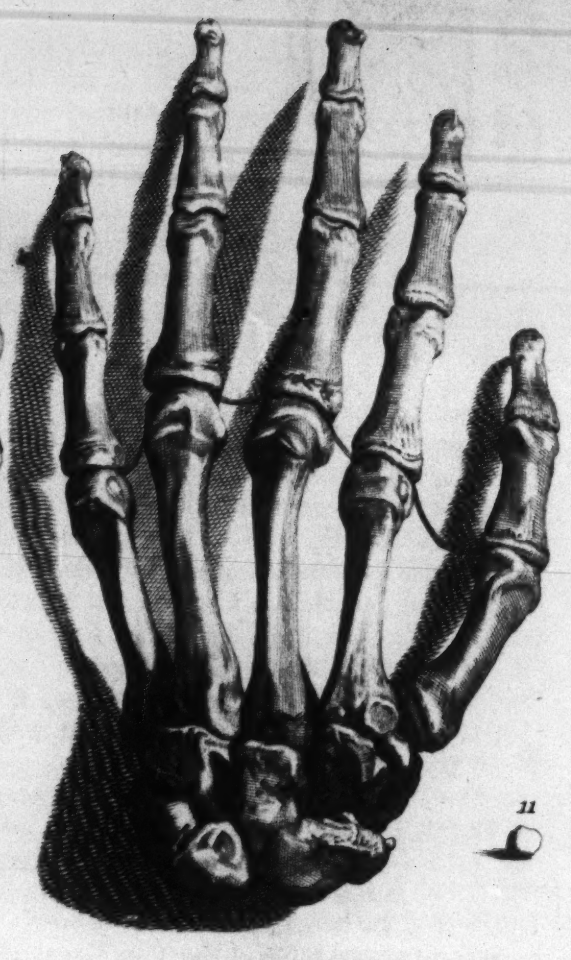


Fig. 3.

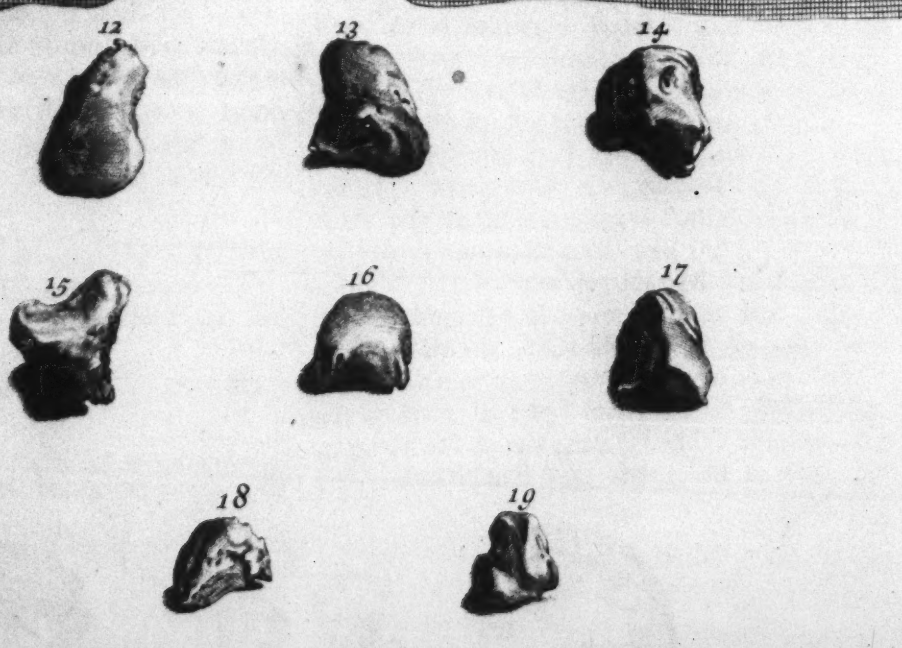
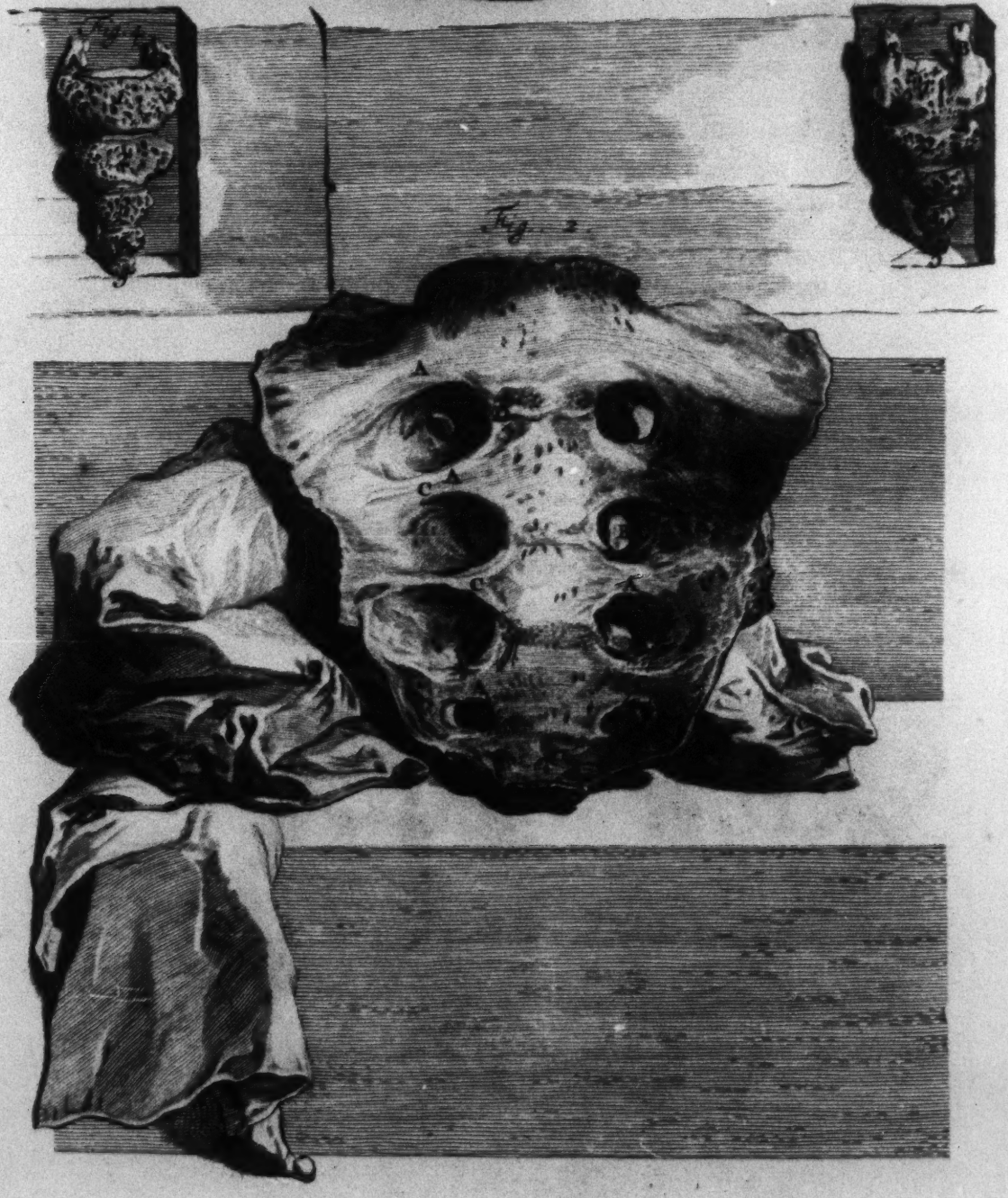


Fig. 1.

Fig. 2.



THE

NINETY-EIGHTH TABLE.

WE come now to the Two Bones which Compoſe the Lower-part of the *Spina*, namely the *Os Sacrum* and *Coccygis*.

Fig. 1.

The Outſide and Back-part of the *Os Sacrum* Compos'd of Four or Five Bones like *Vertebræ* in the *Fœtus*; all which are United in the Adult, and ſome Marks of their Conjunction only Appear, eſpecially on its Internal Concave Part. *Vid. Fig.* 2. D.

AAA, *&c.* Some *Veſtigia* or Marks of the Conjunctions of the Aſcending and Deſcending Proceſs's of the Five *Vertebræ*, which Compoſe the *Os Sacrum*.

BBBB, The *Foramina* Fram'd by the laſt mention'd Tranſverſe Proceſs's, and chiefly fill'd with a Cartilaginous Body; ſome ſmall Branches of Nerves only paſſing out of them to the *Muſculus Glutæus Maximus*.

CCC, DD, The *Sinus's* Fram'd on each Side the *Os Sacrum*, by the Meeting of its Tranſverſe Proceſs's.

E, The Superior Surface of the Upper-part of the *Os Sacrum*, on which is plac'd the Laſt *Vertebra* of the Loins.

F, The *Specus* or Great *Foramen* of the *Sacrum*, being continued from that of the *Vertebræ* of the Back, by which the Nerves that Help to Compoſe the *Cauda Equinæ* Deſcend to their Egreſs, thro' the Internal *Foramina* of this Bone, *Fig.* 2. BBB.

GG, A *Sinus* Fram'd in the Oblique Aſcending Proceſs of the Firſt *Vertebra* of the *Os Sacrum*, which receives the Oblique Deſcending Proceſs of the Laſt *Vertebra* of the Loins.

HH, Thoſe Parts of the *Sacrum* join'd to the *Oſſa Ilii* by the Interpoſition of a Cartilage; which Conjunction is call'd *Syncondroſis*.

II, The Spines of the *Sacrum*.

kk, Two Proceſs's of the *Sacrum*, Connected to the Two Proceſs's of the *Os Coccygis*, Fig. 3. A, B.

Fig. 2.

The Inſide or Fore-part of the *Os Sacrum*.

AAA, The Smooth Inſide of the Five *Vertebræ* which Compoſe the *Os Sacrum*.

BBB, The *Foramina* by which the Nerves paſs out from its *Specus*.

CC, DD, The partly Cartilaginous and partly Bony Connection of the *Vertebræ* of the *Sacrum*.

E, The Inferior Part of the *Sacrum* join'd to the Upper-part of the *Os Coccygis*.

Fig. 3.

The Back-part of the *Os Coccygis*, Compos'd of Five Bones join'd to each other by *Syncondroſis*.

A, B, Two Aſcending Proceſs's of the *Os Coccygis*, join'd to thoſe of the *Sacrum*, Fig. 1. kk.

1, 2, 3, 4, 5, The ſeveral Bones which Frame the *Os Coccygis*.

Fig. 4.

The Internal Part of the *Os Coccygis*, whoſe Characters are Explain'd in the preceding Figure.

THE

NINETY-NINTH TABLE.

Fig. 1.

THE Internal Concave Surface of the *Os Innominatum*, which in the *Fœtus* is Manifeſtly Compos'd of Three Bones; but become ſo United in the Adult, as that no Marks of their Cartilaginous Conjunction do's than Appear. This Bone is by ſome call'd *Ilium*, *Os Coxendicis*, and *Os Anchæ*, and ſometimes *Lumbare*: For the better Deſcription of it, *Anatomiſts* have given diſtinct Names to the ſeveral Parts of it, which Appear in the *Fœtus*, as follow.

ABCD, That Part of the *Os Innominatum*, call'd *Ilium*:

AAA, The Internal Concave Part of it, in which the *Muſculus Iliacus Internus* is plac'd, call'd *Coſta Ilii:*

B, The Spine of the *Ilium:*

C, The *Foramina* of the Blood-Veſſels which paſs into its *Meditullium* or Internal Part.

D, That Part of the *Os Ilium* join'd to the *Sacrum* by a Cartilaginous Interpoſition, which Conjunction is call'd *Syncondroſis.*

E, That Part of the *Os Innominatum*, call'd *Os Pubis* or *Pectinis.*

F, The Great *Foramen* of the *Os Iſchium*, Compos'd by that Bone in Conjunction with the *Os Pubis.*

G, The Fore-part of the *Os Pubis.*

H, The Third Part of the *Os Innominatum*, call'd *Os Iſchium* and *Os Coxendicis.*

I, A Prominence of the *Os Ilium*, whence the *Muſculus Rectus Femoris* do's Ariſe: *Vid. Tab.* 75. G.

Fig. 2.

The External Convext Surface of the *Os Innominatum*:

ABB, Its Cavity, wherein the Head of the *Os Femoris* is receiv'd, call'd *Acetabulum* and *Pixis.*

A, A *Sinus* Excavated in the Inferior Part of the *Acetabulum*, in which the Mucilaginous Gland is plac'd: *Vid. Tab.* 74. l.

The *Ligamentum Rotundum* Figur'd *Tab.* 74. k, Ariſes from the Lower-part of the *Acetabulum* towards its External Margin; whence it paſſes Upwards to its Termination in the Head of the *Os Femoris*; which Diſpoſition of that Ligament, is no ſmall Artifice in Nature, in preventing too great a Coaliſion of the Superior Part of the *Acetabulum* with the Head of the Thigh-bone, in Walking, Running, *&c.* as before Noted.

BB, The External Margin of the *Acetabulum*, whence the *Ligamentum Latum* do's Ariſe; which Ligament is Implanted in the Neck of the *Os Femoris.*

CDE, The *Dorſum Ilii.*

D *Superior*, The *Spina Ilii.*

EE, Divers Proceſſes towards the Back-part of the *Ilium*, where its other Side, Expreſt in the Former Figure D, is join'd with the *Sacrum.*

F, A *Sinus* of the *Os Ilium*, in which the *Muſculus Pyriformis* paſſes towards its Implantation.

G, An Acute Proceſs of the *Iſchium.*

H, An *Appendix* of the *Iſchium*, to which a Ligament Ariſing from the *Os Sacrum* is Faſten'd: From this *Appendix* the *Muſculus Quadratus Femoris*, and the Muſcles Bending the *Tibia*, do Ariſe.

I, That Part where the *Os Iſchium* joins with the *Os Pubis.*

K, The *Os Pubis* or *Pectinis.*

L, The Great *Foramen* of the *Iſchium* and *Pubis.*

N. B. *The Three Bones which Compoſe the* Os Innominatum, *all meet and join in the* Acetabulum.

Fig. 1.

A
A
B
C
C
D

Fig. 2.

Fig. 1.

Fig. 3.

Fig. 2.

Fig. 5

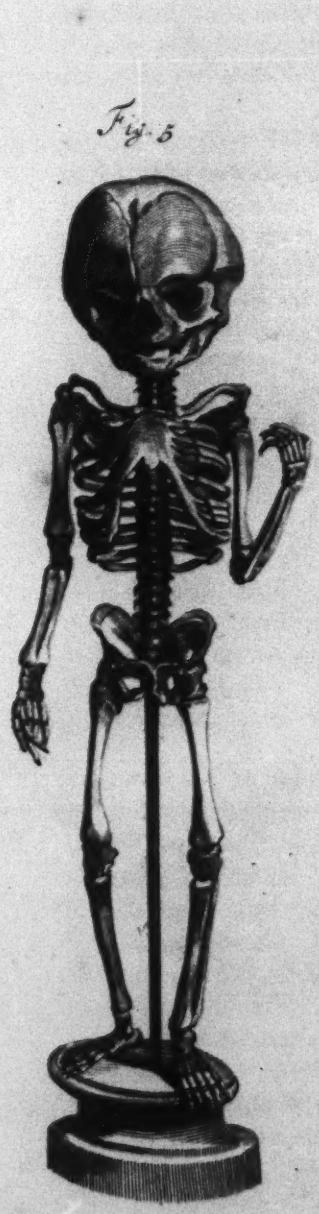


Fig. 4.

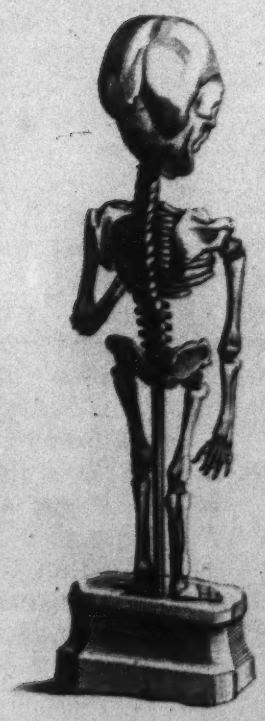
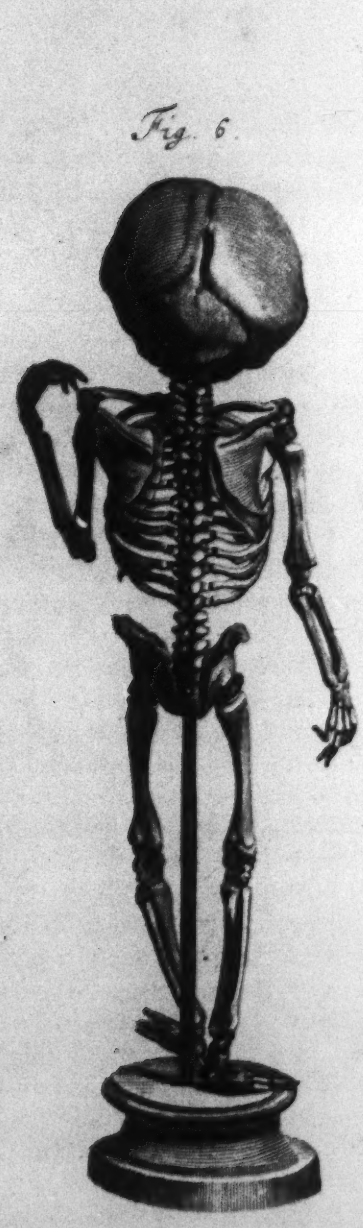


Fig. 6.



THE HUNDREDTH TABLE.

SHEWS the Bones of the *Fœtus* of one Month to Seven Months after Conception.

Fig. 1.

A Skeleton of a *Fœtus* about a Month after Conception; in which the Cartilaginous Rudiments of Bones have divers little Bony Specks or Offifications in the Arms and Legs.

Fig. 2.

The Skeleton of a *Fœtus* of Six Weeks, in which the Rudiments of the Bones of the *Artus* or Limbs do Appear in Bony Specks, ſomewhat Larger than thoſe of the preceding Figure; the *Claviculæ* being Intirely Bony.

Fig. 3, 4.

The Fore and Back-part of the Skeleton of a *Fœtus* of about Three Months; in which the Beginnings of all the Bones Appear.

Fig. 5.

The Skeleton of a *Fœtus* of about Four Months; in which the Bones with their Cartilaginous Appendages do Appear, without any conſiderable Difference (except in Magnitude) from thoſe in the Two preceding Figures.

Fig. 6.

The Back-part of the Skeleton of a *Fœtus* of about Four Months after Conception.

In the *Embryo*, or Firſt Rudiments of the *Fœtus* within the Womb; thoſe Parts which afterwards become Bones, are than Intirely Cartilaginous, till about the End of the Firſt Month after Impregnation; at which Time divers Bony Specks or Offifications begin to Appear about the Middle of the Larger Bones of the Limbs, eſpecially in the *Claviculæ*. Two Months after Conception, the Whole Head do's not afford any Bony Appearance, except the Third Pair of Bones of the Upper Jaw, and the Two Bones which Frame the Lower Jaw, which about this Time Appear Diſtinct. The Middle-parts of the *Claviculæ* are Bony after the Firſt Six Weeks. The Shoulder-blades are without any Proper Figure about the Second Month after Conception, at which Time their Offifications begin in their Middle-parts: About the Third Month their Spinal Proceſs's begin to be Bony, as well as their Coracoidal and Short Proceſs's: Near this Time the Whole Spine, or *Vertebræ* of the Neck, Back, Loins, *Os Sacrum* and *Coccygis*, begin to be Bony. The Sixth *Vertebra* of the Back Internally, ſome Bony Specks in each *Vertebra* Appear, and Gradually Leſſen themſelves to the Fifth *Vertebra* of the Neck; the like Offifications may be Obſerv'd to become Leſs and Leſs in each *Vertebra*, towards the Lower-part of the Spine, to the Third *Vertebra* of the *Os Sacrum*. The Incurvation or Bending Forwards of the Whole Spine at this Time, is Remarkable. The Four Upper *Vertebræ* of the Neck, afford ſome Bony Appearances Laterally, about the Third Month; near which Time the Bodies of the Three Upper *Vertebræ* of the *Os Sacrum*, ſeem to Frame One Bone, but its Lateral Parts are not Bony till the Fourth Month; at which Time the Bodies of the Third and Fourth *Vertebræ* of the Neck begin to Appear. The Fifth and Sixth Month, the *Epiſtropheus* or Second *Vertebra* of the Neck has a Bony Speck; but its Tooth-like Proceſs is yet Cartilaginous: The Fore-part of the *Atlas* or Firſt *Vertebra* is yet wanting. The *Os Coccygis* is Cartilaginous till about the Eighth or Ninth Month; at which Time, in its Internal Part, call'd its Body, Two Offeous Specks Appear about the Bigneſs of Two great Pin's Heads. All the *Vertebræ* of the Spine of the *Fœtus* (at this Time) Appear Compos'd of Three Bones; Firſt that of the Bodies of the *Vertebræ* Forwards; Secondly its Two Lateral Parts which Frame their Tranſverſe Proceſs's: Their Spinal Proceſs's not Appearing Bony till ſome Time after the *Partus*; whence (as *Spigelius* Obſerves) Rope-Dancers, Tumblers, *&c.* by early Practice whilſt they are Children, the Spines of the Back-bone give way to the Inflection of their *Vertebræ* Backwards; the common Poſition of the Spines being Obliquely Deſcending, they do thereby incline more Horizontal, and their Points are alſo rendred more Obtuſe.

The *Os Innominatum* about the Second Month after Conception is Cartilaginous, except that Part of it call'd *Ilium*, where it Frames the Upper-part of the *Acetabulum*, it has a Bony Speck about the Bigneſs of a Common Pin's Head. In the Fourth Month the *Os Coxendicis* or *Iſchium*, (another Part of the *Os Innominatum*) has a Bony Appearance, where it meets the *Ilium* within the *Acetabulum*, not exceeding the Head of a common Pin in Magnitude; the like may be Obſerv'd of the *Os Pubis* within the *Acetabulum*: Theſe Three Bones which Compoſe the *Innominatum*, remain Diſtinguiſh'd in the *Fœtus* by a Cartilaginous Interpoſition, which continues till the Seventh Year, at which Age thoſe Cartilaginous Marks Diſappear. In the Second Month all the Ribs except the Firſt and Laſt, are ſo harden'd, that the Channels (Expreſt *Fig.* 4. *Tab.* 94. E,) or *Sinus's* for the Intercoſtal Blood-Veſſels and Nerves, Appear.

The Time of the Offification of the *Sternum* is uncertain; but *Euſtachius* is miſtaken in ſaying, It's altogether Cartilaginous in Children Newly Born. *Kerckringius* affirms he never Diſſected a *Fœtus* of Four Months, but he found ſome Little Bony-Bodies in the *Sternum*. Their Number and Figure Varying in moſt Subjects, we need not ſay more of them in this place. The Offification of the *Artus* is very Early, as Appears by the Firſt and Second Figures of this Table, where the Middle-parts of the Bones Firſt Appear in little White Specks a Month after Conception, as above Noted; but ſome of their Appendages are Intirely Cartilaginous for ſome Months after the Birth. The Eight Cartilages of the *Carpus* become Bony ſome Time after the Birth. The Appendages of the Bones of the *Metacarpus* and Fingers, continue Intirely Cartilaginous ſome Months after the Birth; the like may be Obſerv'd of the Feet and Toes; the *Patellæ* in like Manner are Intirely Cartilaginous ſome Months after the Birth.

THE

HUNDRED & FIRST TABLE.

REPRESENTS the Fore-parts of the Bones of a *Fœtus* of Nine Months.

A, The *Fronticulus* fram'd at the Meeting of the Bones of the *Sinciput* and Frontal Bones, it being a Diſcontinuation of thoſe Bones in the *Fœtus*; which continues in the Infant for Divers Months, and ſometimes Years.

BB, The Two Frontal-bones.

CC, Parts of the *Bregma* or Sincipital-bones.

DD, The Sagittal Suture Extended to the Upper-part of the Noſe.

EE, The Coronal Suture; they are call'd Sutures in Reſpect of their Appearance in the Adult, but here in the *Fœtus* they rather ſeem to Deſerve the Term *Harmonia*; they Approaching to ſimple Lines, and are not Indented till the Bones become Hard; but ſince a Membrane Interpoſes, *Spigelius* call's this Conjunction in Infants *Synymenſis*.

F, The Cartilage of the Noſe cut off;

G, Its *Septum*.

H H, The Upper-jaw, or properly the Fourth Bone of the Upper Jaw.

I I, The Two Bones which Compoſe the Lower Jaw;

K, Their Suture, or more properly their Conjunction by *Synchondroſis*.

L L, The External or Stony Parts of the Teeth, yet lying within their *Alveoli* or Sockets, and Cover'd with the *Perioſtium* of the Jaw-bone: The Time of their Breaking forth is uncertain, and the Order they Appear in, is commonly well known; yet in this too they ſometimes vary, and the *Dentes Canini* Appear before the *Inciſores*; if their Eruption is Tedious, the Gums thro' frequent Uſe are ſo harden'd, as to Occaſion ill Symptoms; in which Caſe not only the Gums, but the *Perioſtium*, which at that Time immediately Cover's the Upper-parts of the Sockets, is to be Divided by a Sharp Inſtrument; whereby the Impriſon'd Tooth is ſet at Liberty, and the Tenſion of the *Perioſtium* Reliev'd. In Practiſing this Operation, we ought to have Regard to the Time of the Eruption of thoſe Teeth we cut upon; for thoſe only ought to have their Gums and *Perioſtium* Divided, which Appear ſomewhat Prominent: By too early Dividing of thoſe Parts they Unite again, and their *Cicatrice* Render's them more Obſtinate to the Eruption afterwards, eſpecially if the *Perioſtium* its ſelf was not Divided before.

M, The Left Clavicle.

N, The Internal Part of the Right *Scapula*.

O, The *Acromion* of the *Scapula* join'd with the Extremity of the Clavicle.

P, The Cartilaginous *Appendix* of the *Os Humeri*.

Q, The *Os Humeri*.

R R, The *Ulnæ*.

S S, The *Radii*.

T T, The Cartilages which Compoſe the Bones of the *Carpus* on both Sides.

V V, The *Oſſa Metacarpi*, whoſe Extremities are Cartilaginous.

W W, The Bones of the Fingers, whoſe Knuckles or Appendages are Cartilaginous.

X, The *Vertebræ* of the Neck;

Y, Thoſe of the Back;

Z, Thoſe of the Loins.

1, The *Os Sacrum*.

2, The *Coccygis*.

3, The *Ilium*.

4, *Iſchium*.

5, *Pubis*.

6,6, The *Sternum* with Divers little Bony Bodies.

7,7, The True-ribs.

8,8, *&c.* The Baſtard-ribs.

9, The Enſiformal Cartilage of the *Sternum*.

10, The Thigh-bone;

11, Its *Trochanter Major* yet Cartilaginous.

12, The *Trochanter Minor* in like manner Cartilaginous.

13, The Cartilage which makes the *Patella*.

14, The *Tibia*.

15, The *Os Suræ* or *Fibula*.

16, The Cartilages which make the Bones of the *Tarſus*.

17, The *Oſſa Metatarſi*.

18, The Bones of the Toes, which are Cartilaginous at their Extremities, like thoſe of the Fingers.

THE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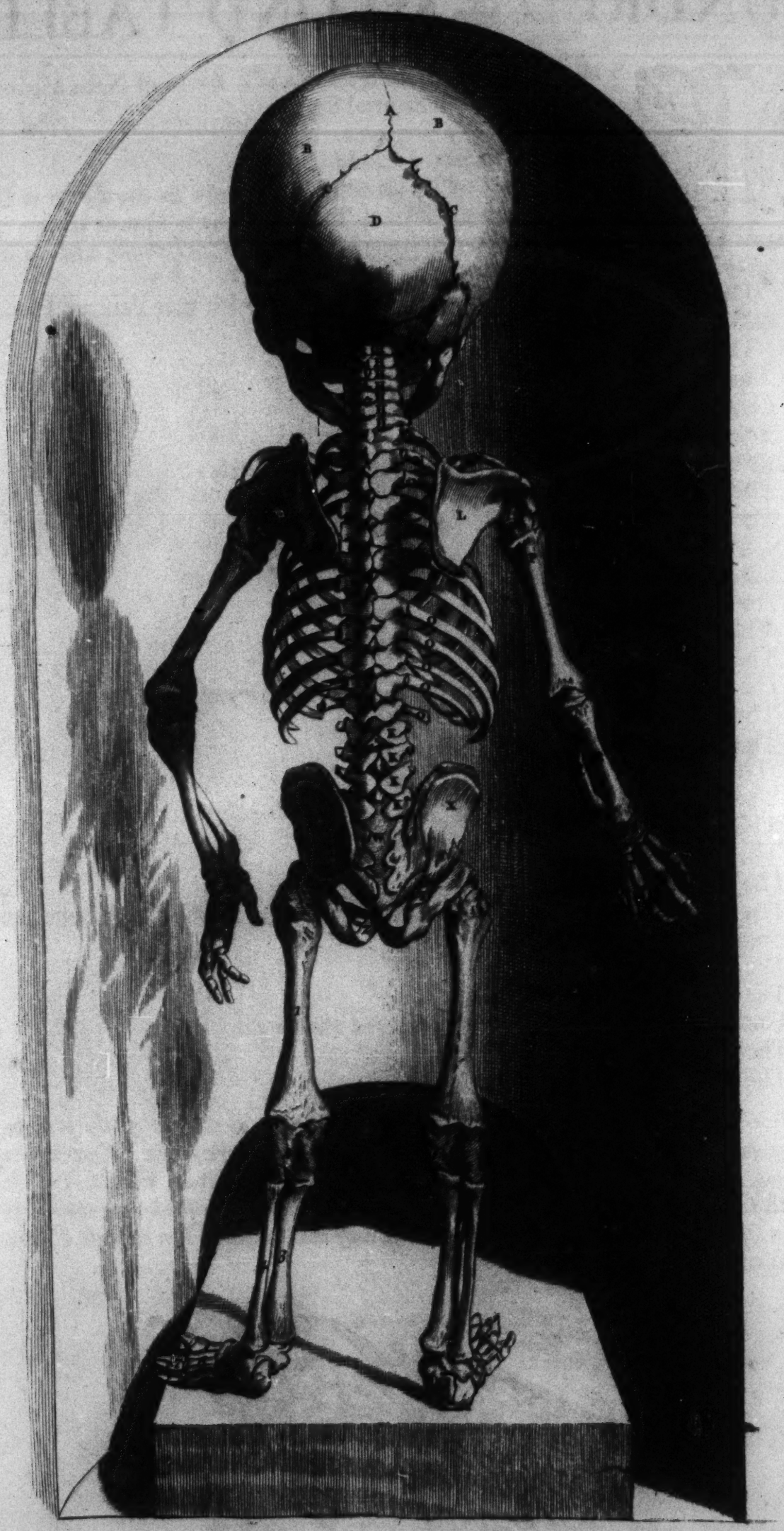
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L

THE

HUNDRED & SECOND TABLE.

IS the Back-part of the Skeleton of a *Fœtus* of Nine Months.

A, Part of the Sagittal Suture.

BB, The *Ossa Bregmatis*.

CC, The *Sutura Lambdoides*.

D, The *Os Occipitis* which commonly in the *Fœtus* is Divided into Four Bones; Three of which Appear in this Figure; the Fourth lying between the *Ossa Petrosa*, and is join'd to the *Os Sphenoides*, Tab. 92. Fig. 2. P.

E, The *Os Temporum* or *Squamosum* not yet join'd with that Part or Process of it, call'd *Petrosum*.

FF, The Lower Jaw.

G, The *Os Jugale*.

HH, &c. The Seven *Vertebræ* of the Neck,

II, &c. Twelve of the *Thorax*,

KK, &c. Five of the Loins, without their Spinal Process's.

L, The Right *Scapula*.

M, Part of the Right *Clavicula*.

NN, &c. The True Ribs.

OO, &c. The Bastard Ribs.

P, The *Os Humeri*.

Q, The *Ulna*.

R, The *Radius*.

S, The Cartilages which Compose the Bones of the *Carpus*.

T, The Bones of the *Metacarpus*.

V, The Bones of the Fingers.

W, The *Os Sacrum*;

X, The *Ilium*,

Y, The *Ischium*,

Z, The *Pubis*,

1, The Thigh-bone.

2, The Cartilaginous Appendages of the Lower-part of the Thigh-bone, and Upper-parts of the *Tibia* and *Fibula*.

3, The *Tibia*.

4, The *Fibula*.

5, The Cartilages which Frame the Bones of the *Tarsus*.

6, The Bones of the *Metatarsus*.

7, The Bones of the Toes.

N.B *There are divers Remarkable Parts of this Figure, as well as of the preceding Table, which have escap'd Lettering : As the Spines of the* Scapulæ, *Cartilaginous Appendages of the* Ossa Humeri, Ulnæ, Radii, Femoris, Tibiæ, Fibulæ, &c. *but most of these being already Letter'd on other Figures of the Bones, we shall Omit their Repetition on these, since the Additional Letters already made with a Pen on these Figures, are so Numerous.*

THE

HUNDRED & THIRD TABLE.

THE Bones of the Inferior *Artus* or Limbs are Divided into the Thigh, Shank, and Foot.

Fig. 1.

The Fore-part of the Left Thigh-bone.

A, The Upper *Appendix* of the Thigh-bone, call'd its Head, cover'd with a Cartilage, which is receiv'd in the *Acetabulum* of the *Os Innominatum*, Tab. 99. Fig. 2. A B B.

The Round Ligament Ariſing from the Inferior Part of the *Acetabulum*, is Inſerted near the Middle of this Head of the Thigh-bone, *Fig.* 2. B. This Articulation of the Thigh-bone with the Hip-bone, is call'd *Enarthroſis*.

B, The *Trochanter Major*, which in Young Bodies Appears join'd with a Cartilage to the Thigh-bone, and is therefore call'd an *Epiphyſis* or *Appendix*.

C, The *Cervix* or Neck of the *Os Femoris*, to which the *Ligamentum Latum* is Faſten'd.

D E, The Inferior *Appendix* of the *Os Femoris*, Framing Two Heads: The Smooth Cartilaginous Surface which Appears between them, receives the Internal Surface of the *Patella*, Fig. 4.

F, A *Sinus* whence the *Muſculus Poplitæus* has its Tendinous Origin.

Fig. 2.

The Poſterior Part of the Right Thigh-bone.

A, Its Head.

B, A little Depreſſure, where the *Ligamentum Rotundum* is Implanted.

C, The Leſſer *Trochanter*, to which the *Muſculus Pſoas* and *Iliacus Internus*, are Inſerted.

D E, The Two Inferior Heads of the Thigh-bone, which are receiv'd in Two Shallow Depreſſures, Fram'd by Two Semilunary Cartilages, plac'd on the Superior Part of the *Tibia*: The *Sinus* between theſe Two Heads, receives a ſmall Prominence on the Upper-part of the *Tibia*, eſpecially in its Flexion: This Articulation of the Thigh with the *Tibia*, is by *Gynglimus*.

F, The Great *Trochanter*, where the *Muſculus Pyriformis*, *Marſupialis*, *Obturator Externus*, and Parts of the *Glutæi Medii*, *Minimi*, and *Quadratus Femoris*, are Inſerted.

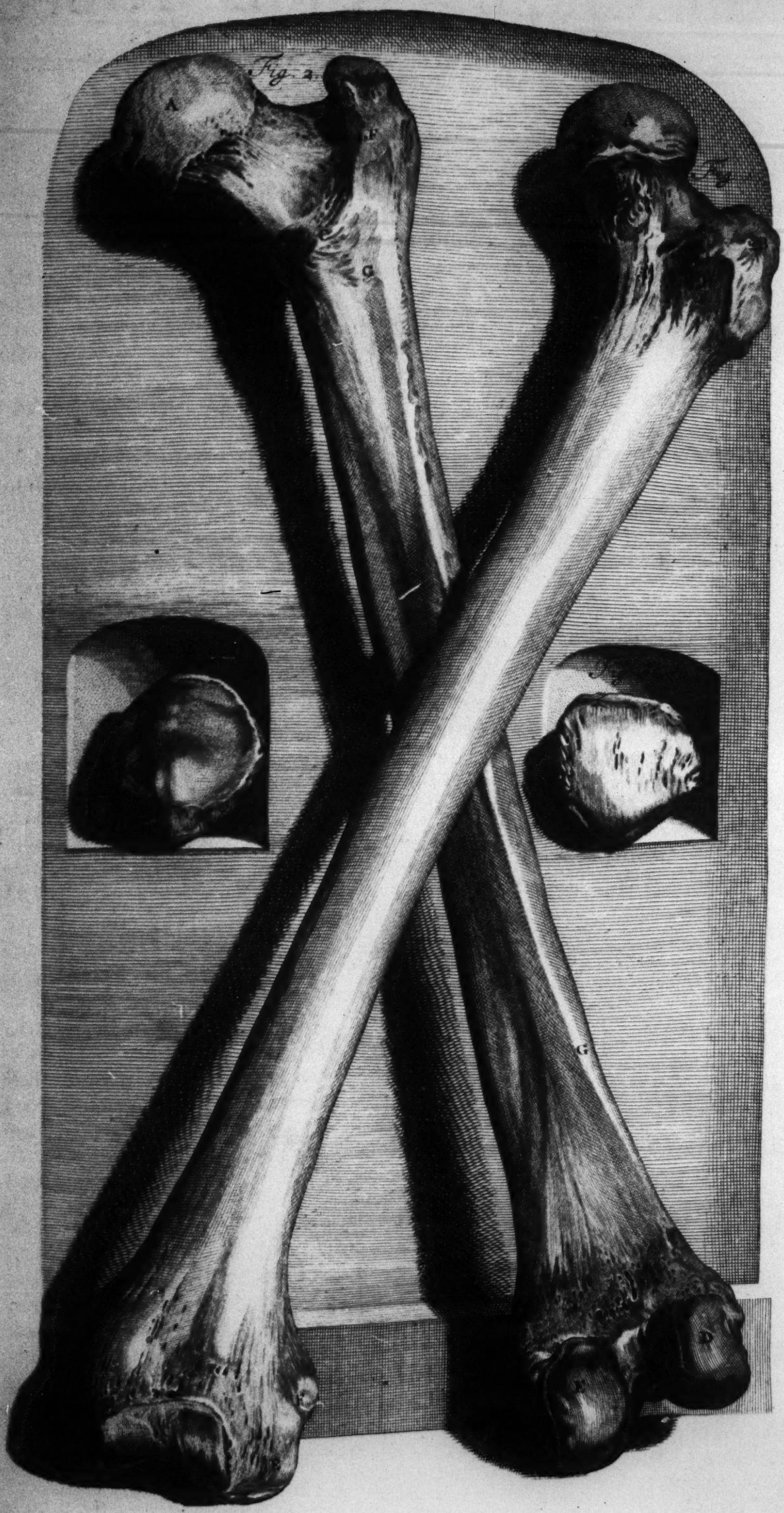
G G, The *Linea Aſpera*, to which Part of the *Muſculus Quadratus Femoris*, *Glutæus Maximus*, and the Greateſt Part of the *Triceps* are Inſerted: The *Vaſtus Externus* and *Internus*, do chiefly Ariſe from the *Linea Aſpera*.

In ſome Bodies, eſpecially Aged, we find Two *Oſſa Seſamoidea* on the Superior Parts of the Two Lower Heads of the Thigh-bone D E: The Office of which, is to Defend the Bending Tendons of the *Tibia* from too great a Colliſion on thoſe Heads of the Bone, which they would elſe be Subject to: The like Oſſification I have more than once Obſerv'd in the Tendon of the *Peroneus Longus*, at its Contortion over the *Os Calcis* towards the Bottom of the Foot.

Fig. 3, 4.

The Former Figure Repreſents the External Rough Part of the *Patella*; the Latter the Internal Smooth Surface of the ſame Bone cover'd with a Cartilage; which is applied to the Fore-part of the Juncture of the *Os Femoris* with the *Tibia*, where it's Faſten'd by the Tendon of all the Extending Muſcles of the *Tibia*; wherefore by *Spigelius* its Conjunction is call'd *Syntenoſis*. The Uſe of the *Patella* (by ſome call'd *Rotula*, *Mola*, *Scutum*, *Os Scutiforme*, &c.) is to prevent the Thigh-bone from Thruſting out Forwards, eſpecially in Walking down any Steep Place, and from Preſſing on the Tendons of the Extending Muſcles of the *Tibia*: It alſo Defends the Articulation of the Thigh and *Tibia*, eſpecially in Kneeling; and like a Pully Acts on the Lower-part of the *Os Femoris*, to Extend the *Tibia* when Inflected.

Fig. 2.



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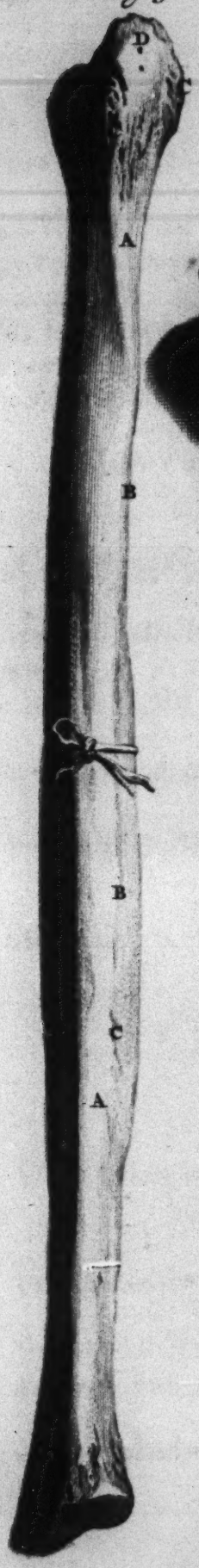

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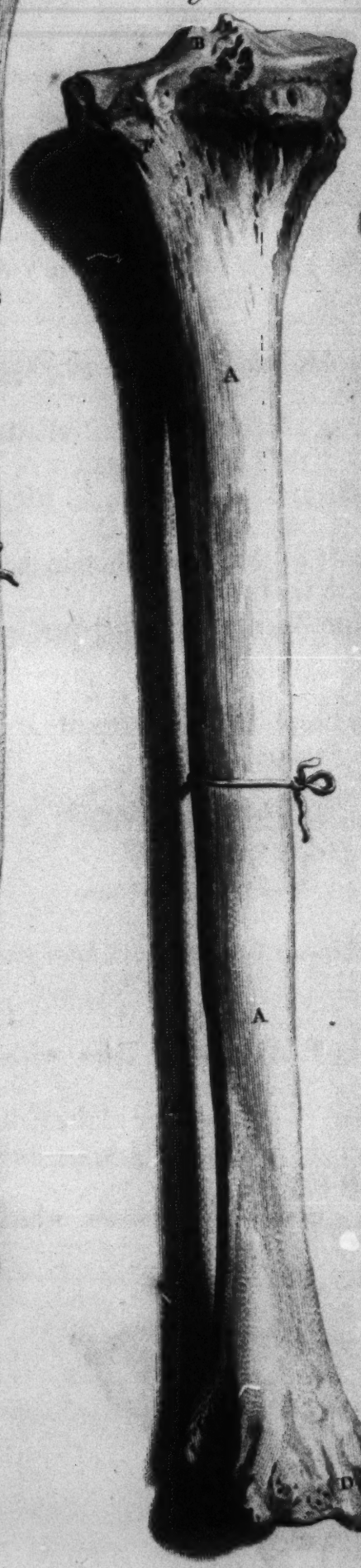
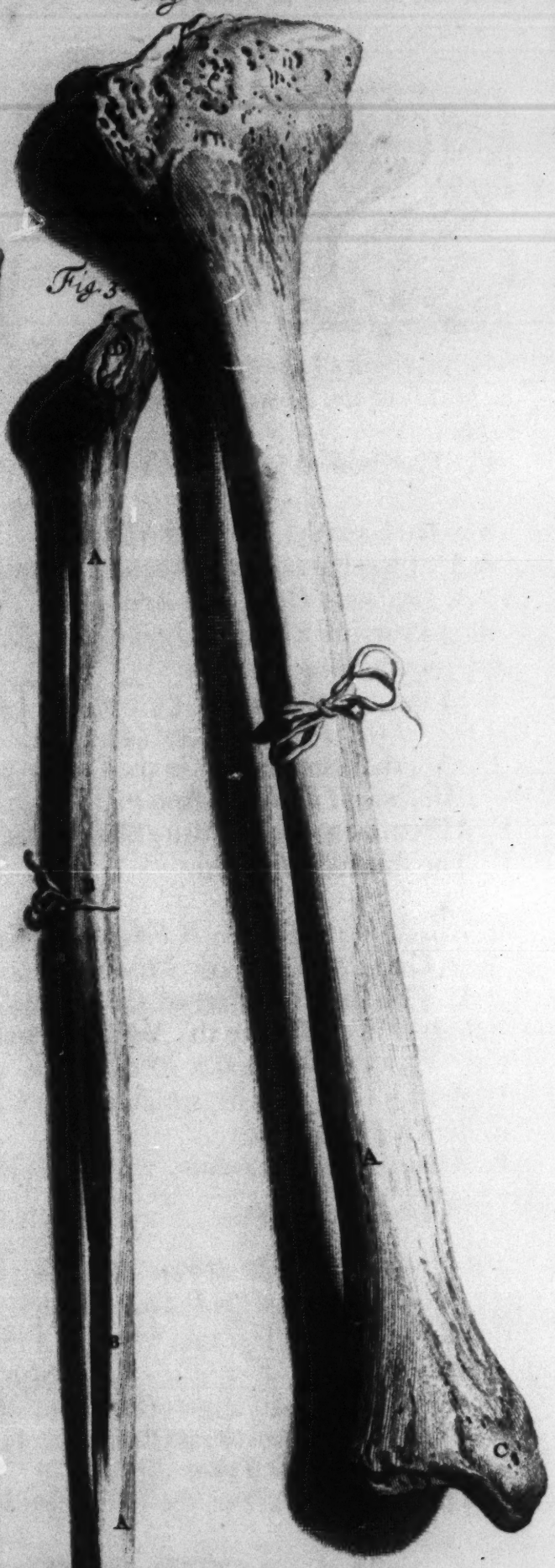


Fig. 1.



THE

HUNDRED & FOURTH TABLE.

Fig. 1.

SHEWS the Fore-part of the Right *Tibia*, or *Major Focile* of the Leg.

A A, The ſharp Edge on the Fore-part of the *Tibia*, call'd its *Spina*.

A *Superior*, A Prominence on the Upper-part of the *Tibia*, to which the Great Tendon of the Muſcles, Extending the Leg, is Inſerted.

B, A Proceſs in the Middle of the Upper *Appendix* of the *Tibia*, to which a Ligament is Inſerted, proceeding from the Hollow or *Sinus*, between the Heads of the Lower-part of the Thigh-bone, Expreſt *Fig.* 2. in the preceding Table.

C, The *Malleolus Internus*, Fram'd by the Lower *Appendix* of the *Tibia*.

Fig. 2.

The Back-part of the Left *Tibia*.

A A, That Part of the *Tibia* whence the *Muſculus Perforans*, or *Flexor Tertii Internodii Digitorum Pedis*, do's Ariſe,

B, A Prominence in its Upper *Appendix*, to which a Ligament is Faſten'd, continued from the *Sinus* between the Two Heads of the Lower *Appendix* of the *Os Femoris*.

C, A *Sinus* in the Lower-part of the *Tibia* and its *Appendix*, in which the Inferior Part of the *Fibula* is receiv'd.

D, Another Small *Sinus* in the Lower-part of the *Tibia*, wherein the Tendon of the *Muſculus Tibialis Poſticus* paſſes towards its Inſertion.

E, A Prominence receiv'd in a Shallow Depreſſure of the Upper-part of the *Fibula*.

F, The *Malleolus Internus*.

Fig. 3.

The Back-part of the Left *Fibula* with its Lower End Uppermoſt, it's alſo call'd *Os Suræ*, *Canna Minor*, *Focile Minus*, and *Os Peronæ*.

A A, The External Part of the *Fibula*.

B B, Its Edge, whence the *Muſculus Peronæus Longus* do's Ariſe.

C C, The Two Extreams of the Bone, properly ſo call'd.

D, Its Lower *Appendix* which makes the *Malleolus Externus*.

E, Its Upper *Appendix*.

F, That Part of the *Fibula*, whence the Upper-part of the *Muſculus Flexor Pollicis Longus*, do's Ariſe.

Fig. 3.*

A B C, *&c.* The Internal Part of the Right *Fibula* next the *Tibia*, with its Lower End Uppermoſt, as in the Former Figure.

D, A Smooth Cartilaginous Surface of the Lower *Appendix* of the *Fibula*, which is Entertain'd in the *Sinus* of the Lower-part of the *Tibia*, Fig. 2. C; and Touches the *Os Calcis* Externally Laterally. *Vid. Tab.* 105. *Fig.* 1. A.

E, A Shallow Depreſſure on the Superior *Appendix* of the *Fibula*, which receives the Prominence of the *Tibia*, Fig. 2. E.

F, The Superior Part of the Bone next its *Appendix*.

THE

HUNDRED & FIFTH TABLE.

WE come now to the Bones of the Foot it self: Theſe like thoſe of the Hand are Divided into Three Parts, *viz.* The Bones of the *Tarſus*, *Metatarſus*, and thoſe of the Toes. The *Tarſus* is Compos'd of Seven Bones, which in this Table are Repreſented Separated from each other; the

1, Is the *Aſtragulus* or *Talus*, by ſome call'd *Os Baliſtæ*;

2, The *Os Calcis*, *Calcaneus* or *Pedis Calcar*;

3, The *Os Spongioſum*, call'd *Cuboides*, *Os Teſſeræ*, *Grandinoſum* and *Polymorphon*;

4, 5, 6, The Three *Oſſa Cuneiformia*;

7, The *Os Naviculare* or *Cymbiforme*; it's alſo call'd *Scaphoeides*.

Fig. 1.

The Upper-part of the Bones of the Right Foot, when join'd to each other with Wires in their Natural Situation.

A B, The *Os Calcis*: A, Its External Lateral Smooth Side, Cover'd with a Cartilage which touches the Internal and Lower-part of the Inferior *Appendix* of the *Fibula*, call'd *Malleolus Externus*: B, The Upper-part of the *Os Calcis*, Cover'd with a Cartilage which is receiv'd in a *Sinus* of the Lower *Appendix* of the *Tibia*.

C, The *Os Calcis*.

D, The *Os Naviculare*.

E, The *Os Spongioſum* or *Cuboides*.

F G H, The Three *Oſſa Cuneiformia*.

I K L M N, The Five *Oſſa Metatarſi* or Second Diviſion of the Foot.

1, 2, 3, &c. to 13, All the Bones of the Toes according to *Bidloo*, but we ſuſpect the Second Bone of all the Leſſer Toes was wanting in the Subject, by which this Figure was Delineated; for I am perſwaded the *Painter* follow'd the Life very ſtrictly, as appears by the Figure.

Fig. 2.

The Bones of the Inferior Part or Bottom of the Right Foot.

A B, Part of the *Aſtragalus*.

C, The *Os Calcis*.

D, The *Os Naviculare*.

E, The *Os Spongioſum* or *Cuboides*.

G H, Two of the *Oſſa Cuneiformia*.

I K L M N, The *Oſſa Metatarſi*.

O O, The *Oſſa Seſamoidea* of the Great Toe.

N.B. *The Bones of the Toes* (*as Expreſt in the Former Figure*) *wanting their Second Internodes.*

Fig. 3.

One of the Nails.

A, The Upper-part of the Nail, commonly call'd its Root.

B, Its Side, which was Border'd with a Protenſion of the *Cuticula*.

C, Its External Convex Part, where its *Series* of Fibres Appear Extended according to its Length, from A to C.

D, Its *Limbus* or Extream Part, which Projects over the Top of the Finger or Toe.

The Nails Ariſe from their Subjacent Parts, call'd their Roots, Fram'd of a Complication of Nerves and Blood-Veſſels; whence Horny Fibres or Tubes Ariſe, and being United, Compoſe that Hard Body call'd the Nail. The Horny Fibres which make the Outſide or Convex Surface of the Nail, Ariſe from the Lower-part of its Root next the Second Internode of the Finger; the reſt of the Horny Fibres which Ariſe from the Superior Part of its Root towards the Top of the Finger; ſucceſſively make the Internal Concave Surface of the Nail: So that the Extremity of the Nail which Extends it ſelf beyond the Top of the Finger, is Fram'd of all the Fibres which Ariſe from the Surface of its Root, and is much Thicker than its other Extream towards its Root: Hence it happens that the External Surface towards the Root of the Nail is Protruded Forwards towards its Top; as may be Obſerv'd if you Mark the Lower-part of the Nail towards its Root, you will ſee it advance to the Top; which at Length is either Worn away or cut off. When any Coroſive Matter (as in a *Paronychia* or the like) deſtroys the Tender Roots of the Horny Fibres, the Nail neceſſarily falls off; but nevertheleſs it will Bud again, and a New Nail will Grow in its place; which commonly do's not prove ſo Beautiful as the Former, whether occaſion'd by too early Uſing it, or its being Expos'd to the External Air, or ſome inconvenient Covering made Uſe of, to Defend it from Outward Injuries.

Fig. 1.

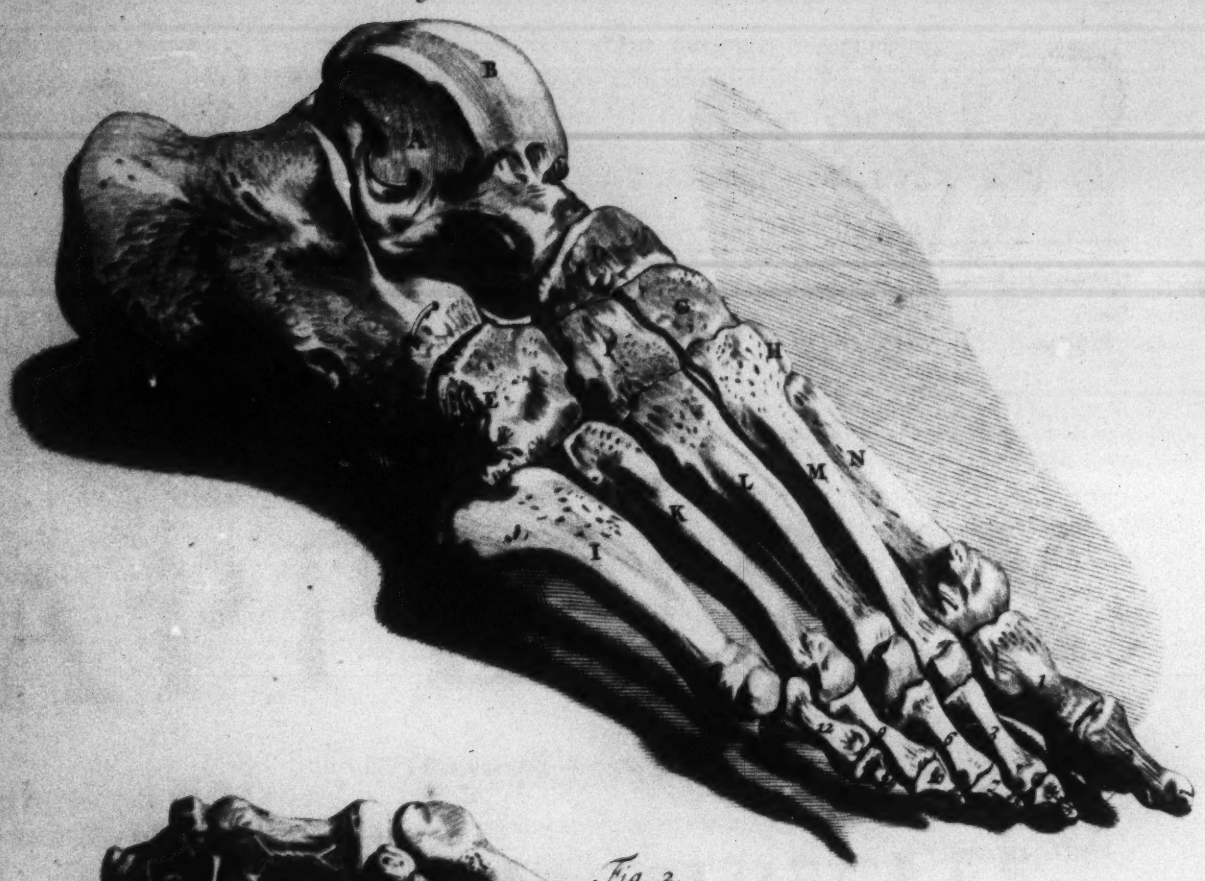


Fig. 2.

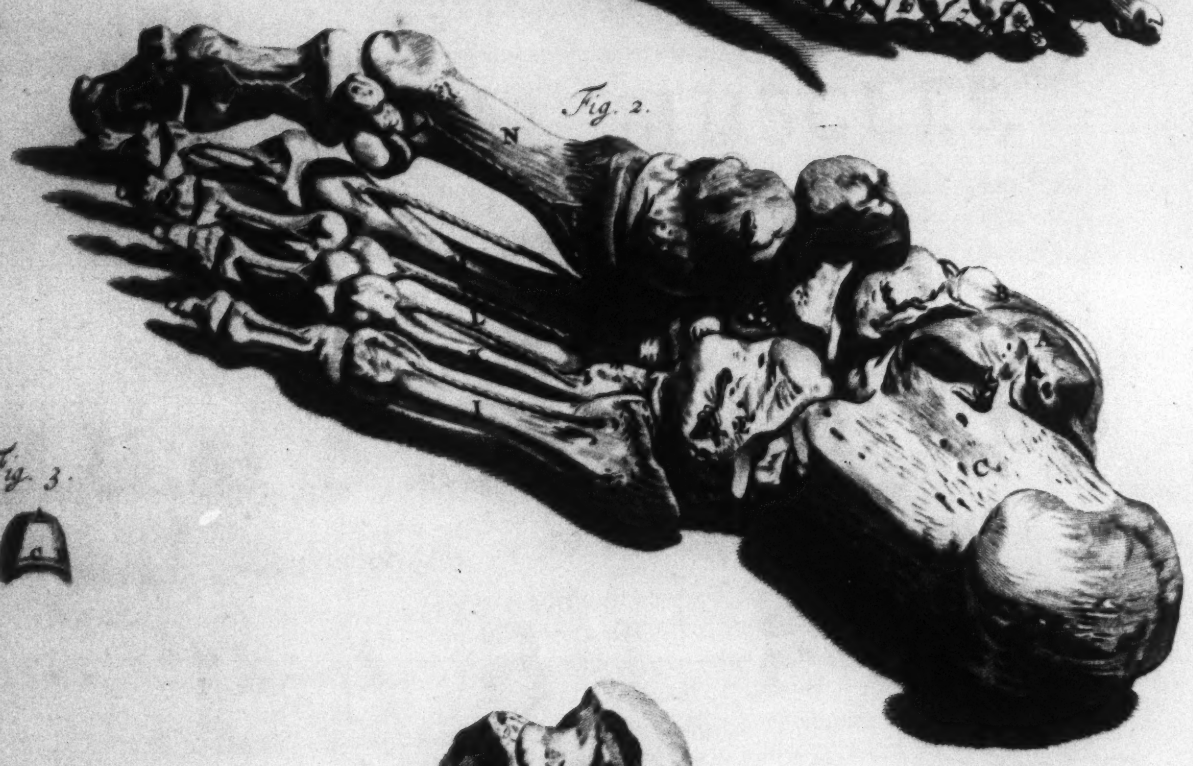
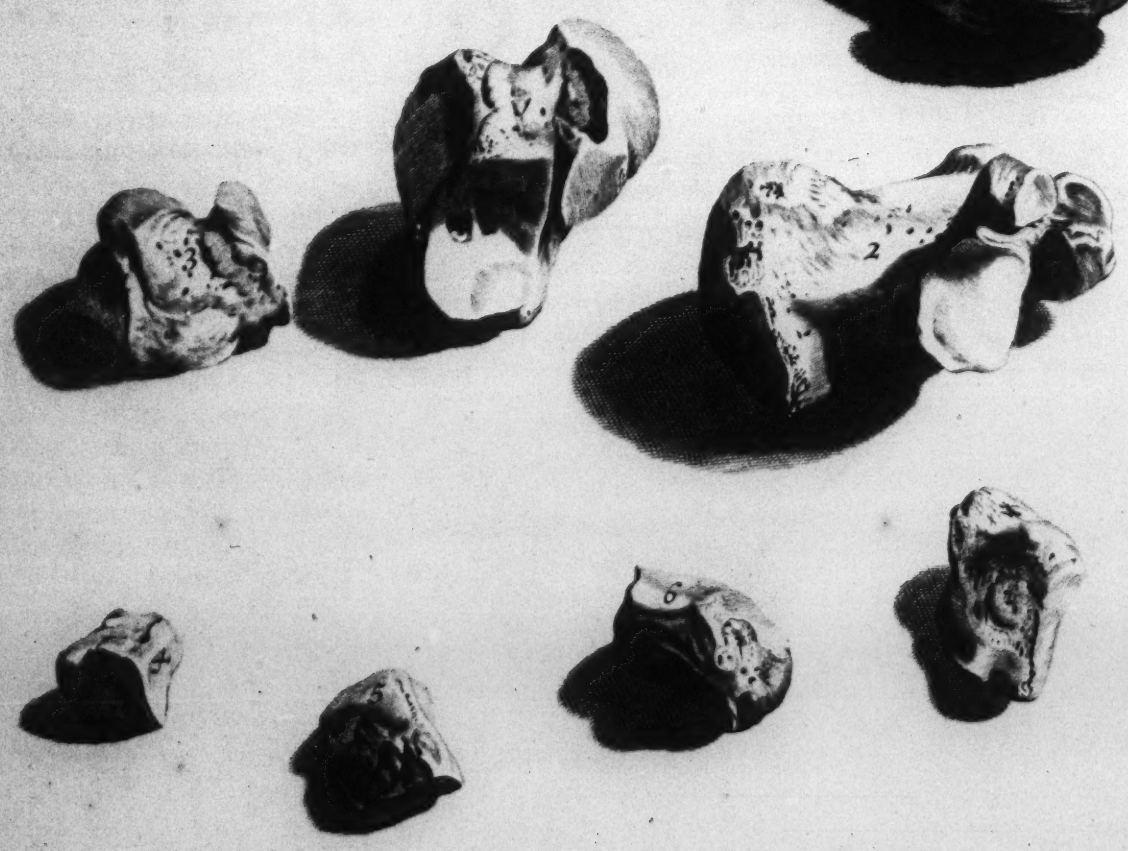


Fig. 3.



AN

APPENDIX,

Repreſenting the

EXTERNAL MUSCLES,

And Divers PARTS

OF

HUMANE BODIES

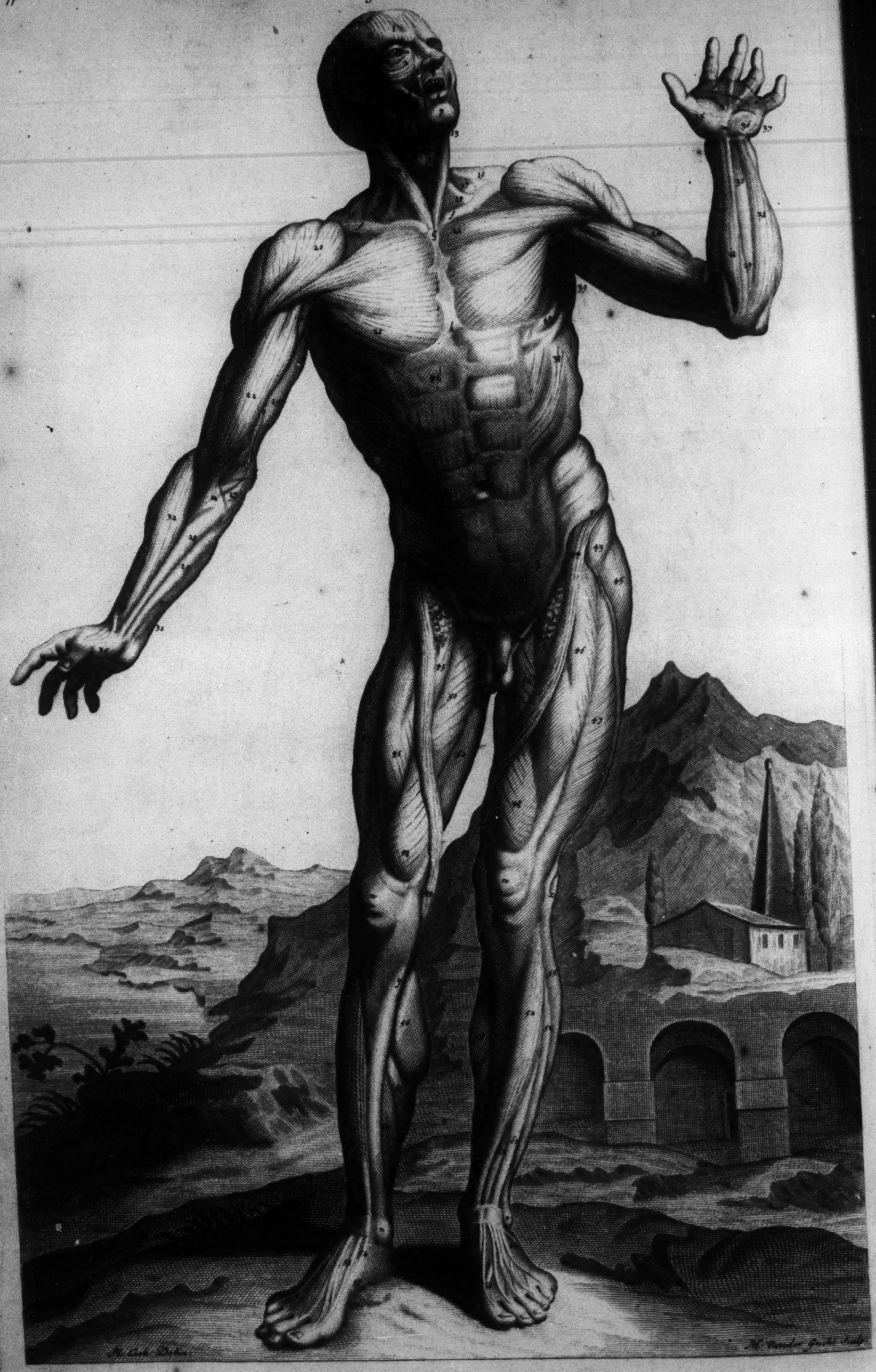
Which are either Omitted, or not well Expreſt in the Preceding

TABLES.

Done after the LIFE.

App. Tab. 1.

Fig: 1.



APPENDIX.

THE FIRST TABLE.

Fig. 1.

REPRESENTS the External Muſcles as they Appear in their Proper Situation on the Fore-part of the Body, after the Skin, Fat, and Membranes are taken off, together with the *Muſculus Quadratus Colli* lying on each Side the Neck, and Tendinous Expanſion of the *Muſculus Membranoſus* from the Fore-parts of the Thighs.

1, The *Muſculus Frontalis.*

2, The *Orbicularis Palpebrarum.*

3, The *Elevator Labii Superioris*, and *Dilatator Alæ Naſi.*

4, The *Elevator Labii Superioris Proprius.*

5, Part of the *Elevator Labiorum Communis.*

6, The *Orbicularis ſeu Sphincter Labiorum.*

7, The *Depreſſor Labii Inferioris Proprius.*

8, The *Depreſſor Labiorum Communis.*

9, The *Zygomaticus ſeu Diſtortor Oris.*

10, The *Buccinator.*

11, The *Temporalis.*

12, The *Maſſeter.*

a, The Parotid Salival Gland.

b, The *Os Jugale.*

c, The Salival Duct, where it Ariſes from the Parotid Gland, and paſſes over the *Maſſeter* Muſcle, whence it Marches thro' the *Muſculus Buccinator* to its Orifice in the Internal Membrane of the Mouth, againſt the *Dentes Molares.*

d, The Lower Jaw-bone made bare.

e, The Inſertion of the Right Maſtoid Muſcle, to the *Proceſſus Mammiformis.*

13, The *Geniohyoideus.*

14, 14, The *Maſtoidei*, where their Two Beginnings are Expreſt on each Side; the One from the Top of the *Sternum* g, and the Other from the *Clavicula* f: The Termination of the Right Maſtoid in the *Proceſſus Mammilaris* e, is alſo Expreſt.

15, The *Sternohyoideus* of the Left Side, that of the Right not being Figur'd.

16, 16, The *Coracohyoideus* Marching under the Maſtoid Muſcle.

17, 17, Parts of the *Scalenus.*

18, Part of the *Elevator Scapulæ.*

19, 19, Parts of the *Trapezius* or *Cucullaris*, on each Side Inſerted to the *Clavicula.*

20, The *Deltoides.*

21, 21, The Two Pectoral Muſcles.

f, f, The *Clavicula.*

g, The Upper-part of the *Os Pectoris* or *Sternum*;

h, The *Scrobiculus Cordis* at the Lower-part of the *Sternum.*

22, The *Biceps Humeri.*

23, 23, Parts of the *Coracobrachiales.*

24, 24, Parts of the *Brachiales Flexores.*

25, 25, Parts of the *Brachiales Extenſores.*

i, A Branch of the Axillary Nerves, which paſſes between the Internal Protuberance of the *Os Humeri* k, and the *Olecranum* or Elbow.

k, The Internal Protuberance of the *Os Humeri.*

l, The Large Trunk of the Axillary Artery, which is frequently Prickt by Bold Blood-Letters.

m, A Thin Membranous Tendon Springing from the *Muſculus Biceps Humeri*, which is Expanded over all the External Muſcles on the Cubit.

26, Part of the *Brachialis Flexor.*

27, *Pronator Radii Teres.*

28, 28, *Radialis Flexor.*

29, 29, *Palmeris Longus.*

30, 30, Parts of the *Muſculi Flexores Secundi Internodii Perforati.*

31, 31, The *Ulnaris Flexor.*

32, 32, The *Supinator Radii Longus* in both Arms.

33, Part of the *Radialis Extenſor.*

34, A Tendon of the *Flexor Tertii Internodii Pollicis.*

35, 35, The *Abductor Pollicis* on both Hands.

n, The *Ligamentum Annulare* of the *Carpus.*

o, o, The Tendinous Expanſion of the *Palmaris Longus.*

36, The *Caro Muſculoſa Quadrata.*

37, The *Abductor Minimi Digiti.*

38, 38, The Fleſhy Parts of the *Obliquus Deſcendens Abdominis* on both Sides, 41, 42, q, q, their Tendons Running over the *Recti* to the *Linea Alba.*

39, 39, Parts of the *Latiſſimus Dorſi* on both Sides.

40, 40, Parts of the *Serrati Majores Antici.*

41, 41, The *Recti Abdominis*, as they Appear under the Tendons of the Two Oblique Muſcles.

p, The *Linea Alba.*

q, q, The Tendons of the Two Oblique Muſcles, call'd *Linea Semilunaris*, before they March over the *Rectus* to the *Linea Alba.*

r, r, The Fore-parts of the Spines of the *Oſſa Ilii.*

s, s, The *Glandulæ Inguinales*; neither theſe Glands, nor thoſe in the *Axillæ*, call'd *Glandulæ Axillares*, are any where mention'd in the preceding Deſcriptions: Their Office is to receive the *Lympha* from all the Inferior Parts, and Diſcharge it again by their Exporting Lymphe-Ducts in its Way towards the Thoracick-Duct. If any Parts of the Legs or Thighs are Diſeas'd, as in an *Anaſarca*, with an *Eryſipelas*, Abceſs, Exulceration, eſpecially with a *Caries* of the Bone, and the like; you will moſt commonly find the Inguinal Glandules Tumid and Hard: The like may be Obſerv'd of the Axillary Glands, when the *Mammæ*, Arms, Cubits, or Hands are in like Manner Affected. The Intumeſcence of theſe Lymphatick Glands, in the Caſes above mention'd, is caus'd by the Vitiated *Lympha*, Ariſing from the Diſeas'd Parts, not paſſing the *Veſiculæ Glandulоſæ*; whence a Tumor is begun, and is ſtill Increas'd by the Acceſſion of the ſucceeding *Lympha*, and the Whole Gland becomes Diſtended to a vaſt Magnitude; as Appear'd in the Caſe of the Late Sir *William Cranmer*, in whom, after Death, I found the Glandule of the Right Inguine to Weigh above Six Pounds, and the Trunk of the Crural Artery paſſing thro' the Lower-part of it. Tho' the Surface of this Tumified Gland ſeem'd to have Matter Fluctuating in divers Parts of it, yet no other than a Glandulous Appearance Offer'd on Dividing it Variouſly. The like Intumeſcence of the Inguinal Glands happen'd after Caſtration, in a *Hernia Carnoſa* of the ſame Side, which in like Manner prov'd Fatal. In the Caſe of an *Anaſarca* of one Leg, on which an *Eryſipelas* happen'd, I found the Inguinal Gland on the ſame Side very much Indurated and ſomewhat Diſtended. When the Excoriation from the *Eryſipelas* began to Abate of the Flux of Matter, the Inguinal Gland above became more and more Diſtended; at length the Outward Skin on it began to look Red, and ſoon after Impoſthumated: After the contain'd *Pus* was Diſcharg'd, I could paſs my Probe very Deep into divers Interſtices of the Gland, in which the Matter was Lodg'd; all which *Sinus's* after ſome Weeks Clos'd by the Uſe of Deſiccative Topicks, with convenient Bandage, without Hard Tents or Dozils. In this Caſe the Patient took divers Doſes of *Calamel*, and Strong Purges. The like Intumeſcence of theſe Glands alſo happens in Venerial Caſes, eſpecially when the External Parts of the *Penis* are Ulcerated, as I have elſewhere taken Notice of.

t, The *Os Pubis.*

u u, The Proceſs's of the *Peritonæum* Covering the Spermatick Veſſels, as they Deſcend to the *Teſtes.*

42, The *Pyramidales.*

43, 43, The *Muſculus Communis Membranoſi* on both Sides, Part of its Tendinous Expanſion of the Left Side being Expreſt, Faſten'd to the Upper *Appendix* of the *Fibula* x.

44, 44, The *Sartorius* on both Sides.

45, Part of the *Glutæus Medius* made Tumid by the Great *Trochanter.*

46, 46, The *Rectus Femoris* on both Thighs.

47, 47, The *Vaſti Externi.*

48, 48, The *Vaſti Interni.*

49, Part of the *Pectineus.*

50, 50, The Great and Firſt Deſcrib'd Heads of the *Triceps* on both Sides.

51, 51, The *Gracilis* partly Expreſt on both Sides.

w w, The *Patellæ* or Knee-pans.

x, Part of the Tendon of the *Membranoſus*, Inſerted to the Upper *Appendix* of the *Fibula.*

y, The Right *Tibia* made bare.

z, The *Malleolus Internus.*

*, The *Malleolus Externus.*

† †, The Annular Ligament of the *Tarſus.*

52, The *Tibialis Anticus.*

53, 53, The *Extenſor Pollicis Pedis Longus* on both Feet.

54, Part of the *Peroneus Secundus* or *Semifibuleus.*

55, Part of the *Peroneus Primus* or *Fibuleus.*

56, 56, Parts of the *Gaſterocnemus Externus* on both Legs.

57, Part of the *Flexor Tertii Internodii Digitorum Pedis Perforans.*

58, Part of the *Gaſterocnemus Internus.*

59, The *Abductor Pollicis.*

60, Part of the *Extenſor Secundi Internodii Digitorum Pedis*, or *Extenſor Brevis.*

61, The Tendon of the *Extenſor Pollicis Brevis.*

62, The *Extenſor Tertii Internodii Digitorum Pedis Longus.*

APPENDIX.

THE SECOND TABLE.

Fig. 1.

THE External Muſcles and other Parts as they Appear on the Back-part of a Humane Body, after the Skin, Fat, and Membranes are remov'd.

1, The *Muſculus Temporalis.*
2, The *Orbicularis Palpebrarum.*
3, Part of the *Zygomaticus.*
4, The *Depreſſor Labiorum Communis.*
5, The *Maſſeter.*
6, Part of the *Maſtoideus.*
7, Part of the *Elevator Scapulæ.*
8, Part of the *Splenius.*
9, The *Occipitalis.*
10, 10, 10, The *Cucularis* or *Trapezius*, on both Sides.
a, The *Os Bregmatis*;
b, The *Occipitis.*
c, Part of the Sagittal Suture, or Longitudinal Suture.
d, The Lambdoidal Suture.
e, The *Os Jugale.*
f, The Parotide Salival Gland.

Under this Parotide Salival Gland, are plac'd divers Lymphatick Glands, which receive *Lympha* from their Importing Lymphe-ducts, Ariſing from the Neighbouring Parts as well as the Parotide Salival Gland it ſelf. Beſides theſe Lymphatick Glands immediately under the Parotides, there are ſtill others of the ſame kind below them, lying near the Jugular Veins, and are continued to the *Claviculæ*; all theſe Tranſmit *Lympha* (by their Exporting Lymphe-ducts) either to the Subclavian Glands, or to the Upper-part of the Thoracick-duct immediately. Theſe Lymphatick Glands become Tumid in Scrophulous Caſes, and may be happily remov'd by Inciſion, and no great Flux of Blood follow; which Practice is Preferable to the Application of Eſcharoticks which are commonly made uſe of. I have at this Time a Patient in whom not only the above mention'd Superior Lymphatick Glands of the Left Side were Diſtended, but the Parotide Salival Gland of the ſame Side was very much Indurated, and not a little Diſtended alſo; in the Middle of which Induration of the Parotide Gland, I found an Aperture whence the Spittle Flow'd in no ſmall Quantity, in Maſtication: In Preſſing the Part near the Aperture, I found the Spittle Guſh out, which had Lodg'd it ſelf between the Skin and the Gland. After the External Skin was Divided, I could plainly ſee the Spittle Ariſe from divers Interſtices of the *Lobuli* of the Gland; when he Chaw'd any Thing, the Spittle Flow'd on his Handkerchief (*per Stillicidium,*) which he was wont to hold under his Ear to receive it. The *Sinus's* from whence the Spittle was Diſcharg'd being thus laid Open, the Quantity of Spittle which Flow'd, ſoon Abated; the Fungous Fleſh being remov'd by the Application of Gentle Eſcharoticks, the Flux of *Saliva* Leſſen'd. He Drinking of a Decoction of *Sarſaparila, China, Lig. Guiaci*, &c. for his common Drink, and Eating of a very Drying Diet, ſuch as Biskets, Almonds, and the like.

Aquapendens in Treating of the Wounds of the Cheeks, mentions a clear Water not unlike the Tears of the Eyes, which he ſaw Flow from a very ſmall Hole when the Patient Eat; to which he adds, *Unde & quomodo effluat, Ego certe neſcio.*

The Accurate *Nuck* tells us (from *Roonhuyſe* a Dutch Writer) of a Patient in whom the Spittle Flow'd from an Ulcer in the Cheek, not unlike that above mention'd: Nor was the Flux of Spittle Abated, and the Ulcer brought to a *Cicatrix* without a Drying Diet, as the Incomparable *Nuck* takes Notice. A Flux of *Lympha* ſometimes happens in Wounds of the Limbs, where the Lymphe-ducts are Wounded. After Letting Blood in the Flexure of the Cubit, I ſaw (the next Day) a vaſt Quantity of Lympha had Stain'd the Shirt which lay over the Orifice, and about the Arm; the next Day after, the Flux of Lympha Abated, and the Orifice ſoon after Clos'd. Perhaps a great Part of that Thin Matter call'd *Gleet*, which we find ſome Days after Amputations, or large Wounds, Flows from the Divided Lymphe-ducts as well as Nutritive Tubes of the Part. When Lymphe-ducts are broken in Old Ulcers, and the Flux of *Lympha* do's not eaſily Abate, tho' the Patient is confin'd to a Drying Diet. The like Difficulty attended the reſtraining of the Flux of *Lympha* when a Lymphe-duct was Open'd in an Iſſue in the Leg, as was Communicated to me by *Mr. Bernard* and *Mr. Guddier* both Experienc'd Surgeons of this Town; in which Caſe a Drying Diet ſtopt the Flux, and the Ulcer was ſoon after Cicatric'd; tho' many Deſicatives Topicks, as well as Actual and Potential Cauteries, had before prov'd Ineffectual. By this we may ſee (however ſome endeavour to Diſparage Anatomy) how Uſeful it is in the Practice of Surgery.

g, The Spine of the Seventh *Vertebra* of the Neck.
h, h, The Tendons of the *Cucularis* on both Sides Inſerted to the Spines of the *Scapulæ.*
i, i, The Extremities of the Spines of the *Scapulæ*, to which the *Claviculæ* are Connected.
k k, The Lower Angles of the *Scapulæ.*
l l, The *Baſis Scapulæ.*
m m, The Upper *Appendices* of the *Ulnæ*, call'd *Olecrani.*
n n, The External Protuberance of the *Oſſa Humerum*, where the *Radii* are Articulated, and the Muſcles Extending the *Carpi* and Fingers do Ariſe.
o o, The Inferior *Appendix* of the *Ulna* next the *Carpus.*
11, The *Muſculus Deltoides* of the Right Side.
12, 12, The *Infraſpinatus* on both Sides.
13, 13, Parts of the *Rotundi Minores.*
14, 14, The *Rotundi Majores.*
15, 15, 15, The *Latiſſimi Dorſi.*
** Their Tendinous Parts paſſing over the *Sacrolumbales* and *Dorſi Longiſſimi.*
16, 16, Parts of the *Rhomboides* on both Sides, near their Inſertions to the *Baſis* of the Shoulder-blades, l l.
17, 17, The *Gemellus*, or *Biceps Externus* on both Arms.
18, 18, Parts of the *Brachiales.*
19, 19, Parts of the *Supinator Radii Longus* on both Sides.
20, 20, The *Anconeus*:
21, 21, The *Radialis Extenſor* on either Cubit.
22, 22, The *Extenſor Digitorum Communis*:
23, 23, The *Extenſor Minimi Digiti*:
24, 24, The *Ulnaris Extenſor*:
25, 25, Parts of the *Perforatus* or *Flexor Secundi Internodii Digitorum.*
26, 26, The *Ulnaris Flexor* on both Cubits.
27, Parts of the Tendons of the *Radialis Flexor* & *Palmaris.*
28, 28, The *Abductores Minimi Digiti* on either Hand.
29, The *Adductor Pollicis ad Dorſum Manus.*
30, The Extending Muſcles of the Thumb.
31, 31, Parts of the Oblique Deſcending Muſcles of the *Abdomen* on both Sides.
32, The *Glutæus Major.*
33, 33, Parts of the *Glutæus Medius* on both Sides.
34, The Fleſhy Part of the *Membranoſus* or *Muſculus Communis Membranoſi.*
p p, The Back-part of the Spines of the *Oſſa Ilii.*
q, The *Os Sacrum.*
r, A Prominence made by the Great *Trochanter* under the Tendinous Expanſion of the *Glutæus Major.*
ſ, ſ, The Great Crural Nerves as they Deſcend in the Ham.
t, The Upper *Appendix* of the *Fibula.*
u u, The Lower *Appendix* of the *Fibula*, call'd *Malleolus Externus.*
w, The Lower *Appendix* of the *Tibia* or *Malleolus Internus.*
x, The Tendon of the *Gaſterocnemii.*
y, The *Os Calcis.*
35, 35, Parts of the *Vaſti Externi.*
36, 36, The *Biceps Femoris* on both Sides.
37, 37, The *Seminervoſi* or *Semitendinoſi.*
38, 38, The *Semimembranoſi.*
39, 39, Parts of the *Triceps Femoris* on both Sides.
40, Part of the *Gracilis* on the Left Thigh.
41, Part of the *Sartorius* on the ſame Thigh.
42, Part of the *Vaſtus Internus* on the ſame Thigh alſo.
43, 43, The *Gaſterocnemii Externi.*
44, 44, The *Gaſterocnemii Interni* Cover'd with the Tendons of the *Externi.*
45, The *Peroneus Longus.*
46, 46, The *Abductor Minimi Digiti* on both Feet.
47, Part of the Tendon of the *Extenſor Digitorum Longus* on the Right Foot.

App. Tab. 2.

Fig. 2.

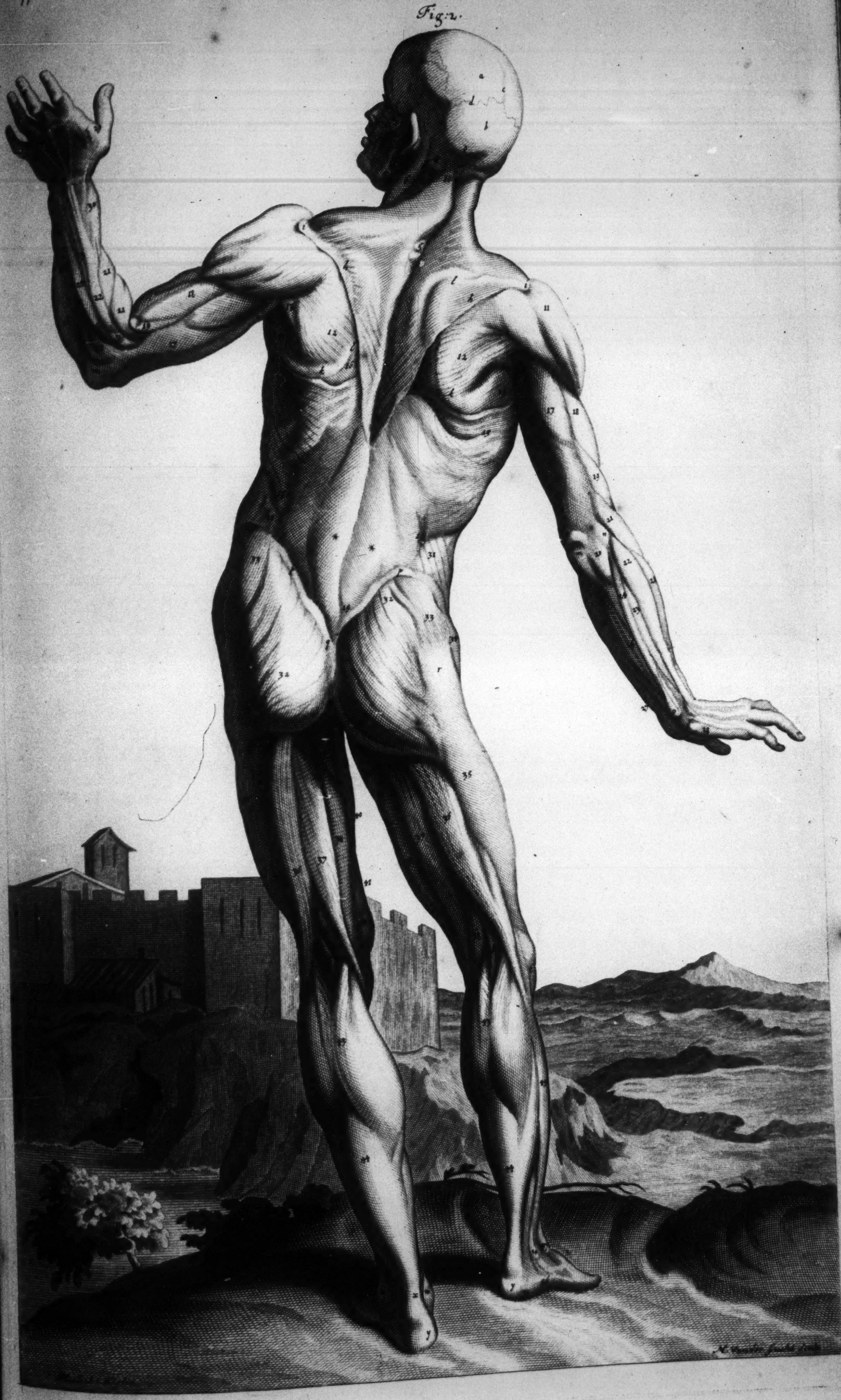


Fig: 3.

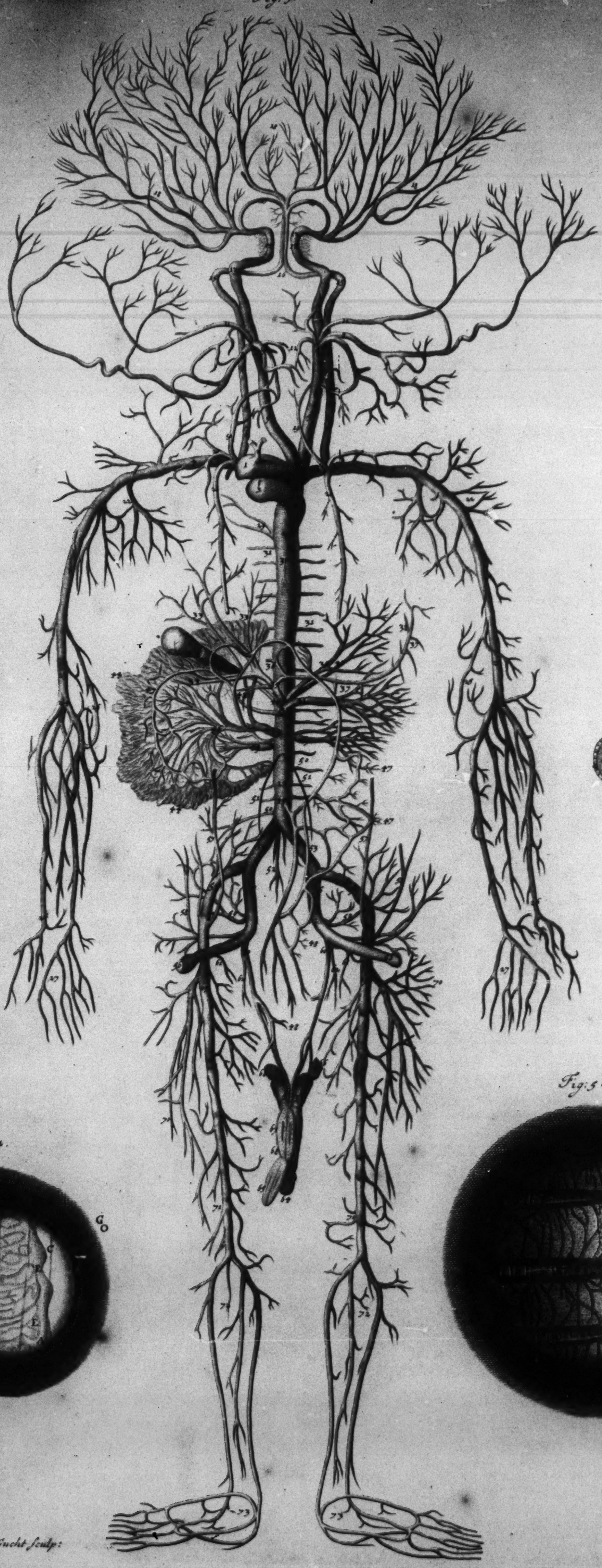
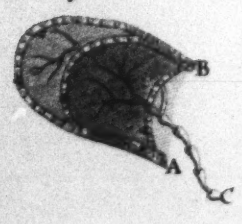


Fig: 7.

Fig: 6.



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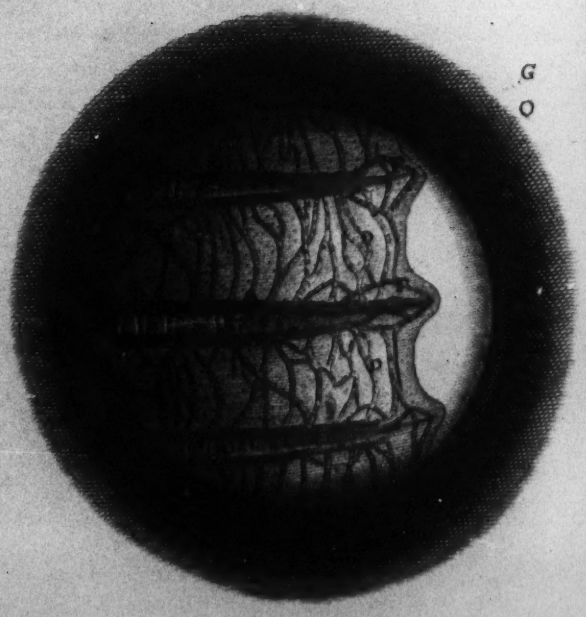
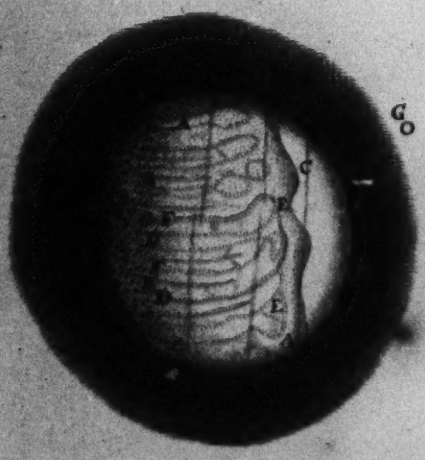


Fig: 4.



M. Vander Gucht sculp:

APPENDIX.

THE THIRD TABLE.

Fig. 3.

SHEWS the Trunks and large Ramifications of all the Arteries of a Humane *Fœtus*, Injected with Wax, and Display'd after Dissection.

1, The *Aorta*, or *Arteria Magna*, cut from its Origin at the Orifice of the Left Ventricle of the Heart.

2, The Trunk of the Great Coronal Artery of the Heart Arising from the Beginning of the *Aorta*; the Rise of the Lesser Coronal Artery, not Appearing in this Position of the *Arteria Magna*.

3, The *Canalis Arteriosus* Fill'd with Wax, by Injecting it into the *Aorta*: This Arises from the Upper Part of the Trunk of the Pulmonick Artery (near its Two Ramifications which pass into the Lungs) and after an Oblique Descent under the Beginning of the *Aorta*, Empties it self into the Upper Part of its Descending Trunk, as here Expresst 28. Besides this Communication between the Right Ventricle of the Heart of a *Fœtus*, and *Arteria Magna*; there is another call'd *Foramen Ovale*, by which Part the Blood, at its Entrance into the Right Ventricle, passes into the Pulmonick Vein, and the Left Ventricle of the Heart, thence to the *Aorta*. Hence it Appears, That the Blood which Flows into the Right Ventricle of the Heart of the *Fœtus*, Passes immediately (by the *Canalis Arteriosus*) to the *Arteria Magna*, as well as the Blood of the Left Ventricle (which is Receiv'd immediately from the *Vena Cava*, or Right Auricle of the Heart) into the Pulmonick Vein, and Left Ventricle: So that the Blood in the *Fœtus*, which Runs into the Right Ventricle, passes immediately to the *Aorta*, by the *Systole* of the Heart, as well as the Blood of the Left Ventricle: Nor do's any Part of the Blood of the Right Ventricle pass into the Left; Or any Blood of the Left Ventricle first pass the Right, as in the Adult. Hence the Heart in the *Fœtus* may be said to have but One Ventricle in Effect, since the Blood which passes One, do's not come into the Other, before it arrives at the *Aorta*. After the Birth, when the Infant has Receiv'd Air into the Lungs (and their *Vesiculæ* remain Distended, and the Ramifications of the Pulmonick Arteries and Vein consequently are more Display'd) the Blood then begins to pass their Extremities, more freely than before; and the Arterious Chanel at length becomes neglected, as well as the *Foramen Ovale*; the Former becoming a Ligament, and the Latter Cloling up. The too early Occlusion of these Passages in Children, often produces many Disorders, as Inflammation of Divers Parts of the Head, Neck, and Lungs; in which Cases, Bleeding is of great Use: Of this, I have met with many Instances in the Dissection of Children. I have often found the *Foramen Ovale* open in the Adult: The *Canalis Arteriosus*, for what I have observ'd, closes sooner than that *Foramen*.

4, 4. The Subclavian Arteries, Arising from the *Arteria Magna*, to which the Axillary Arteries, and those of the Arms (23, 23.) are continu'd.

5, 5. The Two Carotide Arteries Arising from *Aorta*, between the Subclavian Arteries.

6, 6. The Two Vertebral Arteries, Arising from the *Subclaviculæ*, which pass thro' all the Transverse Processes of the Vertebræ of the Neck, from whence they are freed.

7, 7. The Arteries which Convey Blood to the Lower Part of the Face, Tongue, Adjacent Muscles, and Glandules.

8, 8. The Trunks of the Temporal Arteries Spring from the Carotides, and giving Branches to the Parotide Glands (9, 9.) as well as the Temples (10, 10.) also to the Neighboring Muscles, Hairy-Scalp, and Forehead.

11, 11. The Occipital Arteries, whose Trunks pass close by the Mammiform Process, and are Distributed on the Hinder Part of the Hairy-Scalp, where they are Inosculated with the Branches of the Temporal Arteries.

12. Divers Arteries, which carry Blood to the *Fauces Gargareon* and Muscles of those Parts.

13, 13. The Contortions of the Carotid Arteries, as they pass the *Basis* of the Skull to the Brain.

14, 14. Those Parts of the Carotid Arteries, where they pass by each Side of the *Sella Turcica*, where Divers Small Branches do Arise from them, and help to Compose the *Rete Mirabile*, which is more conspicuous in Quadrupedes than Men.

15, 15. The Contortions of the Vertebral Arteries, as they pass the Transverse Processes of the First *Vertebra* of the Neck, towards the Great *Foramen* of the *Os Occipitis*. I have more than once taken Notice, That the Cavities of these Arteries, where they are Contorted, have been Larger than their Inferior Trunks; whereby the *Impetus* of the Blood must necessarily be very much Lessen'd, as well as by their Contortions only. In Quadrupedes the Angles of these Contortions of the Arteries of the Brains are more Acute, which in them is the more Necessary to Lessen the Force of the Blood at their Extremities, by Reason of the Horizontal Position of their Trunks.

16. The Vertebral Arteries, where they Ascend on the *Medulla Oblongata*, towards the Annular Protuberance, or *Pons Varolii*.

17, 17. The Communicant Branches between the Carotid and Vertebral Arteries; in this Subject, somewhat Larger than we Commonly find them.

18, 18. The Ramifications of the Arteries within the Skull; the Larger Trunks of which lie between the Lobes of the Brain, and in its *Sulci*. From the Extremities of these Arteries of the Brain are Continu'd its Veins, whose Trunks vary much in their Position from the Arteries: They Entring the Brain at its *Basis*, and Distributing themselves, as above noted; whereas the Trunks of the Veins are Extended on the Surface of the Brain, and Discharge their Blood into the Longitudinal *Sinus*. Nor do's the Veins of the Brain Accompany its Arteries at their Ingress, as in other Parts: Or the Arteries and Veins of the *Dura Mater*, pass the same *Foramen* in the *Basis* of the Skull.

19, 19. The Arteries of the *Larynx* Thyroid Glandules, and Adjacent Muscles and Parts, Arising from the Subclavian Arteries.

20, 20. Others Arising near the Former, which convey Blood to the Muscles of the Neck, and *Scapula*.

21, 21. The *Mammariæ*, which Arise also from the Subclavian Arteries, and Descend on the Cartilages of the True Ribs Internally, about Half an Inch distant on each Side the *Os Pectoris*, or *Sternum*. Some Branches of these pass thro' the Pectoral, as well as Intercostal Muscles, and give Blood to the *Mammæ*, where they meet with some Branches of the Intercostal Arteries, to which they are Inosculated. These Mammary Arteries join with the Large Trunks of the Epigastricks (57, 57.) also, by which Means the *Impetus* of the Blood in Integuments of the *Abdomen*, is carry'd on with more Force; the Extremities of the Intercostal and Lumbal Arteries do also Inosculate with each other, as well as with These.

22, 22. The Arteries of the Muscles of the *Os Humeri*, and some of those of the *Scapula*.

23, 23. Those Parts of the Large Trunks of the Arteries of the Arms, which are liable to be Wounded in Opening the *Vena Basilica*, or Innermost of the Three Veins in the Bending of the Cubit, (See *Fig.* 1. of this *Appendix* between 26. and m,) where the Precise Progress of this Artery is Expresst.

24, 24. The Divisions of the Arteries of the Arm below the Flexure of the Cubit.

25. A Communicant Branch of this Artery, Arising from the Trunk of the Artery of the Arm, above its Flexure at the Cubit, which is Inosculated with the Arteries of the Cubit below. In some Subjects you will not find This Communicant Branch, as here represented; in whom there are divers Smaller Branches of the same Kind. By these Communicant Branches (of the Upper Part of the Brachial Artery with those of the Cubit) the Blood still passes, tho' the Trunk (23) is firmly Ty'd, which is done *In taking up the Artery*, as it's call'd when 'tis Wounded, in the Cause of an *Aneurisma*. Besides firmly Tying the Trunk of the Artery above the Place where it is Wounded; it is also Necessary to tie it in like manner below, least the Blood Convey'd by the Communicant Branches to the Inferior Trunk, still pours out at the Wound of the Artery from below, in a Retrograde Manner.

26. The External Artery of the Cubit, which makes the Pulse near the *Carpus*.

27. The Arteries of the Hands and Fingers.

28, 28. The Descending Trunk of the *Arteria Magna*.

29. The *Arteria Bronchalis*, Springing from one of the Intercostal Arteries; It sometimes Arises immediately from the Descending Trunk of the *Aorta*, at other times from the Superior Intercostal Artery, which Springs from the Subclavian. These Bronchial Arteries Inosculate with the Pulmonary Arteries, as I have elsewhere taken Notice, and which I since find is mention'd and Figur'd the Accurate *Ruysch*, *Epist. Anatom.* 6. Fig. 5. c, c, c.

30. A Small Artery Springing from the Fore-part of the *Aorta Descendens*, passing to the *Gula*: *Ruysch* tells us of Branches of Arteries from the Superior Intercostal, which go to the *Gula*.

31, 31. The Intercostal Arteries on each Side the *Arteria Magna Descendens*.

32. The Trunk of the *Arteria Cœliaca*, from whence Springs

33, 33. The Hepatick Arteries, and

34. The *Arteria Cystica*, lying on the Gall-bladder,

35. The *Arteria Coronaria Ventriculi Inferior*,

36. The *Pylorica*,

37, 37. The *Epiploica Dextra*, *Sinistra*, and *Media*, Springing from the *Coronaria*.

38. The Ramifications of the Coronary Artery, which embrace on the Bottom of the Stomach.

39. The *Coronaria Ventriculi Superior*.

40, 40. The Phrenick Arteries, or the Two Arteries of the Diaphragm; that of the Left Side Arising from the Trunk of the *Arteria Magna*, the Right Springing from the *Cœliaca*.

41. The Trunk of the Splenick Artery, Arising from the *Cœliaca*: This is Contorted in the Adult, as it appears *Tab.* 36.

42. Two Small Arteries going to the Upper Part of the *Duodenum* and *Pancreas*; the Rest of the Arteries of the *Pancreas* Spring from the Splenick Artery in its Passage to the Spleen.

43. The Trunk of the *Arteria Mesenterica Superior*, Turn'd towards the Right Side.

44, 44. The Branches of the Superior Mesenterick Artery, freed from the Small Guts; here the Various *Anastomoses*, the Branches of this Artery make in the Mesentery, before they arrive at the Intestines, may be observ'd.

45. The Inferior Mesenterick Artery, Arising from the *Arteria Magna*.

46. A Remarkable *Anastomosis* of this Inferior Mesenterick Artery, with the Superior.

47, 47, 47. The Branches of the Inferior Mesenterick Artery, as they pass to the *Intestinum Colon*;

48, 48. Those of the *Rectum*.

49, 49. The Arteries of the Kidneys.

50, 50. The Vertebral Arteries of the Loins.

51, 51. The Spermatick Arteries, which descend to the *Testes*, are so Small as to escape being Fill'd with Wax.

52. The *Arteria Sacra*.

53, 53. The *Iliaci*.

54, 54. The *Rami Iliaci Externi*:

55, 55. The *Iliaci Interni*; which are here Larger in the *Fœtus* proportionably, than in the Adult, by Reason of their Conjunction with the Two Umbilical Arteries.

56, 56. The Two Umbilical Arteries cut off.

57, 57. The Epigastrick Arteries, which Ascend under the Right Muscles of the *Abdomen*, and are Inosculated with the *Mammariæ*, as above Noted.

58, 58. Branches of the External Iliack Arteries, passing between the Two Oblique Muscles of the *Abdomen*.

59, 59. Branches of the Internal Iliack Arteries, which Convey Blood to the Extending and Obturating Muscles of the Thighs.

60, 60. The Trunks of the Arteries, which pass to the *Penis*.

61, 61. The Arteries of the Bladder of Urine.

62, 62. The Internal Arteries of the *Pudendum*, which with those here Expresst of the *Penis*, make the Hypogastrick Arteries in Women. The External Arteries of the *Pudendum*, Arise from the Upper Part of the Crural Artery, which is immediately below the Epigastricks.

63. The *Penis* Distended with Wind, and Dry'd.

64. The *Glans Penis*.

65. The Upper Part or *Dorsum Penis*, cut from the Body of the *Penis*, and Rais'd to Shew the *Corpora Cavernosa Penis*.

66, 66. The *Corpora Cavernosa Penis*, Freed from the *Ossa Pubis*, and Ty'd after Inflation.

67. The Two Arteries of the *Penis*, as they Appear Injected with Wax, in each Cavernous Body of the *Penis*.

68. The *Capsula*, and *Septum* of the *Corpora Cavernosa Penis*.

69. The Crural Arteries.

70, 70. The Arteries, which pass to the Muscles of the Thighs and *Tibiæ*: The Nomination of each Muscle in this Place would be Tedious, and of no Use; wherefore I shall pass Them by here, as I have done in the Arms; it being sufficient, we know, the Progress of the Great Trunks, to avoid Wounding them in Chirurgical Operations, or to find them on Occasion: We shall begin first with the Description of the Trunk of the Arteries of the Arm. So soon as the Subclavian Artery has past the *Clavicula*, it marches thro' the *Axilla*, wherefore it's call'd *Axillaris*, whence it's Trunk Descends between the *Musculus Brachiæus Internus* and *Externus*, on the Inside of the Arm, and is Divided below the Bending of the Cubit, as you see it Expresst in the Figure; it Parting with Several Branches to the Neighbouring Muscles, and Parts it Passes by; Their Distribution not being alike in any Two Subjects, I have hitherto Examin'd, or in the Right and Left Sides of the same, as appears in this Figure: Tho' the Progress of their Large Trunks are commonly Uniform; yet in that too, they vary considerably, and the Trunk of the Artery at the Flexure of the Cubit sometimes runs Collateral with the *Vena Basilica*, tho' it most commonly passes Under that Vein: Of this, Those that Let Blood ought to take Notice, and that the Vessel they See or Feel has no Pulsation, before they thrust their Launset into it. Nor can I omit a Useful Observation in this Place; which is, That the Operator before He applies his Ligature on the Arm, should first feel for the Artery, because afterwards its Pulsation cannot be so easily Discover'd; the Reason of which is Obvious. After Amputation, above the Elbow, the Trunk of the Axillary Artery only, affords any Considerable Flux of Blood: In Amputations below the Elbow, we find Two, sometimes Three, and Four Considerable Trunks, which may require *Tying Up*; the Manner of which Practice is so well Describ'd in the Works of *Ambrose Parey*, I shall omit saying any Thing of it in this Place, tho' it has been most commonly Disus'd in this Kingdom till of Late; the many Conveniencies of which Practice will (I don't doubt) sufficiently Recommend it to a General Use, as well in other Impetuous Fluxes of Blood, as in those after Amputations. After the External Iliack Artery (54.) is past out of the Cavity of the *Abdomen*, it obtains the Name of the Crural Artery, (69.) and Descends obliquely on the Crural Vein, on the Fore-part of the Thigh, immediately Under the *Musculus Sartorius*: About Four Fingers Breadth above the Knee, these Two Large Blood Vessels pass thro' the Lower Part of the *Musculus Triceps* to the Ham, (71.) here the Vein is Plac'd Above the Artery as in other Parts, and so Descends to the Foot, after being Divided in Three Branches, as is Expresst in *Fig.* 72.

71. That Part of the Crural Artery, which passes the Ham.

72. The Three Large Trunks of the Arteries of the Leg.

73. The Arteries of the Foot.

Fig. 4.

The Extremities of the Veins and Arteries, as they Appear by a Microscope in the Transparent Fin of a Living Grig.

A A, The Fin of a Grig, lying in a Glass Tube.

B B, The Cartilaginous Extremities of the Ribs, on which the Fin is Extended.

C C, The Small Scratches, or Streaks we commonly find in the Glass Tube.

D D, The Branches of the Arteries, Proceeding from their Larger Trunks in the Body of the Grig, Conveying the Blood to the outmost Margine of the Fin.

E E, The Extremities of the Arteries, Continu'd to the Veins, wherein One Globule of the Blood only moves before another. Besides these Communications of the Veins with the Arteries, there are still others which are Larger, wherein more than two Globules can pass together: Those are every where Interspers'd with the Lesser, as plainly appears in the Fin and Tail of the Flounder, *Fig.* 5. F.

F F, The Veins which convey the Refluent Blood to the Heart.

G G, The Magnitude of the *Area*, taken by the Microscope.

Fig. 5.

The Extremity, or outmost Margin of the Side-Fin of a Small Living Flounder, view'd with a Microscope.

A A, The Cartilaginous Extremities of the Ribs, on each Side of which, the Trunks of the Great Blood Vessels pass.

B B, The Arteries.

C C, The Veins.

D D, Their Lesser Extremities Continu'd to each other.

E E, The Large Branches of Veins and Arteries, Inosculating with themselves, before they arrive at their Extremities.

F F, The Larger Conjunctions of the Veins and Arteries, at the outmost Margin of the Fin.

G G, The *Area* which the Microscope took in, as it appears to the Naked Eye.

Fig. 6.

Represents (according to our Conception) the Origination of the Lymphducts from the Extremities of the Blood Vessels.

A, The Small Branch of an Artery,

a a, Its Extremity Continued to the Vein.

B, The Branch of a Vein.

C, A Lymphduct Arising from the Extremities of the Blood Vessels, either by the Mediation of Divers *Vesiculæ*, or Small Tubes; which have Apertures into the Sides of the Blood Vessels.

Fig. 7.

The Manner of the Origin of the Excretory Ducts, from the Extremities of the Blood Vessels.

A, The Artery.

B, The Vein.

C, A Branch of the *Ductus Excretorius*.

d d, The Extremities of the Blood Vessels.

e e, The Extremities of the Excretory Tubes, or their Rise from the Pores in the Sides of the Blood Vessels, before they Unite in the Branch of the Duct.

APPENDIX.

THE FOURTH TABLE.

Fig. 8.

THIS the *Basis* of the Skull with the First *Vertebra* of the Neck remaining on it, together with divers Muscles and other Parts.

A, B, C C, D D, The First *Vertebra* of the Neck: A, its Fore-part, behind which, the Tooth-like Process of the Second *Vertebra* is plac'd; B, its Back-part wanting a Spinal Process where the *Musculi Recti Minores Postici* Arise; C C, The Transverse Process's: D D, Two somewhat Oval Process's of the First *Vertebra*, which Move Sideways on the like Process's on the Upper Part of the Second *Vertebra* of the Neck.

E, A Cavity immediatly behind the Fore-part of the First *Vertebra*, Fenc'd with a strong Ligament Backwards next the *Medulla Spinalis*, in which the Tooth-like Process of the Second *Vertebra* Tab. 93. Fig. 3, 4. A A, is receiv'd.

F, The Great *Foramen*, through which the *Medulla Spinalis* Descends from the Head.

G, A Small Muscle, which from its Position I call *Rectus Lateralis*: I first met with it in Dissection, some time since, and afterwards found it was partly Mention'd by *Galen*, and Describ'd by *Falloppius*: It Arises from the Superior Part of the Extremity of the Transverse Process of the First *Vertebra* of the Neck, and Ascends directly to its Implantation in the *Os Occipitis*; when it Acts, it Nods the Head Laterally.

H, The *Musculus Rectus Anterior Minor*, so call'd from its Progress, Situation and Size, it being much less than the *Rectus Major*, Tab. 18. I I. It Arises from the Fore-part of the First *Vertebra*, and is Inserted to the *Appendix* of the *Os Occipitis*: This with its Partner Nod the Head Forewards, and may be term'd *Annuentes*.

I I, The Perforations in the Transverse Process's of the First *Vertebra*, in which the Trunks of the Vertebral Arteries and Veins Pass.

K K, The Trunks of the Vertebral Arteries in their Contorted Passage between the Transverse Process of the First *Vertebra* and Great *Foramen* (F) of the *Os Occipitis*.

L L, The Mamiform Process's.

M M, The Cartilages of the *Meatus Auditorius*.

N N, A Probe Inserted into the *Meatus à Palato ad Aurem*. This Passage from the *Fauces* admits the Air to Pass from thence into the Cavity of the *Tympanum*, whereby the *Membrana Tympani* becomes more Distended, and the least *Impetus* of the outward Air Shakes it, together with its little Bones that are Contiguous to it. Besides this Passage into the *Tympanum*, there is another Passage out of it, by the Upper Part of the *Membrana Tympani* into the *Meatus Auditorius*, by which some in holding their Nostrils and Mouths, and forcing up their Breath, can move a small Feather or the Flame of a Candle, when held near the Outward Ear; in others it's still Opener, and they can Blow Smoke out at their Ears. Tho' this Passage thro' the *Tympanum* is not commonly so Open as in the First Case, yet naturally there is a Small Passage by the Upper Part of the *Membrana Tympani* into the *Meatus Auditorius*, which seems necessary, to the End when the *Tympanum* is Fill'd with Air, any Sudden *Impetus* of the External Air should not Violate the *Membrana Tympani*. The *Meatus à Palato ad Aurem* do's not only Convey Air into the *Tympanum*, but (constantly remaining Open) it Admits of a Fluctuation of the Contain'd Air of the *Tympanum*, as well as a Fresh Supply: If this Passage is Straiten'd, a Difficulty of Hearing necessarily Follows; if it is totally Obstructed, a Deafness; in which Case, the Taking of Sneezing Powders gives Relief.

O, The Glandulous Membrane Continu'd from the *Foramina Narium* to the Inside of the *Fauces*.

P P, The *Processus Styloides*.

Q, The Carotid Artery Cut off near its Entrance into the *Os Petrosum*.

R R, The Lower Parts of the *Ossa Jugalia*.

S, A Cartilaginous Body lying in the Depressure of the *Os Temporum*, where the *Processus Condyloformis* of the Lower Jaw is Articulated.

T, The same Intermediate Cartilage of the Articulation Rais'd.

V, The Smooth *Sinus* in the *Os Temporale*, which Receiv'd the last mention'd Cartilage.

t, Part of the Mucelaginous Gland of this Articulation, Cleaving to the above-mention'd Cartilage.

W, The Upper Part of the *Os Temporale* Cut off.

X, The *Os Occipitis*, in like Manner Saw'd off.

Y, The *Musculus Occipitalis*, as it Arises from that Part of the *Os Occipitis*, where the Muscles of the Head are Inserted, whence Mounting it, soon becomes Tendinous, and Marches on the *Sinciput*, where it's Join'd with the Tendon of the *Frontalis*: Unless it may be Suppos'd, that the Occipital and Frontal Muscles are One Biventral Muscle, Arising from the *Occiput* and Inserted to the Lower Part of the Skin of the Fore-head, and being Fasten'd to the Hairy-scalp, Moves it Forewards and Backwards, as well as Lifts up the Lower Part of the Forehead with the Eyebrows.

Z Z, The Thinner Part of the *Os Occipitis*, where the Muscles of the Head are Inserted.

a, The *Gargareon* Supported by the Probe, N N, Inserted into the *Meatus à Palato ad Aurem*.

b b, The little Glandules, which Appear in Cutting the *Fauces* from hence.

c c, The Extremity of the *Processus Pterygoides*, or more properly the Extremity of a Small Slender Process above the *Processus Pterygoides* in this Position of the Skull; since Anatomists in Describing the Muscles of the *Uvula* have call'd this Process *Pterigoides* or *Aliformis*, we shall still Retain the same Name, tho' the Aliform Process's Expreſt, *Tab.* 92. *Fig.* 2. K, are Distinct Process's, and no ways like these.

d d, The *Musculi Sphenopterigoſtaphilini*, so call'd from their Origin, Progress, and Insertion: they are also call'd *Pterigopalatini* and *Sphenopterigopalatini*; they Arise Fleshy from an Acute Process of the *Os Sphenoides* Expreſt *Appen. Fig.* 15. H. whence they Pass to the *Processus Pterygoides*, c c, where they become Tendinous, and are Reflected over those Process's to their Insertions on the Fore-part of the *Gargareon*: When these Act, they Draw the Fore-part of the *Gargareon* towards the Pterigoid Process's, whereby it's pull'd somewhat Upwards, as well as Forewards.

e e, The *Sphenoſtaphilini*: These Arise from the same Process's of the *Os Sphenoides* with the former, and are Inserted on the Back-part of the *Gargareon* Opposite to the Former. These Draw the *Uvula* Upwards and Backwards, whereby it Prevents the Ascent of the Aliment into the *Foramina Narium* in Deglutition, as it Happens in those in whom the *Uvula* is wanting.

f, The *Musculus Pterygoideus Externus* Left at its Origin, at the External Part of the *Processus Pterygoides*, as well as the Upper Part of the *Os Sphenoides* it self; whence it Passes Backwards to its Insertion at the Neck of the *Processus Condyloides* of the Lower-Jaw. When this and its Partner Act they Draw the Lower-Jaw Forewards, whereby the Fore-teeth of the Lower-Jaw are Driven beyond those of the Superior, as *Falloppius* Observes.

g, The *Musculus Pterygoideus Internus* also Free'd from the Lower-Jaw, and Left at its Origin: *Tab.* 15. *Fig.* 2. N. It's Represented at its Insertion.

h, Some Appearance of the *Septum Narium* Backwards.

i i, The *Dentes Molares*.

k k, The *Canini*.

l, The *Incisores*.

m, The *Glandulæ Labiorum*, as they Appear in the Inside of the Upper Lip. Under the Internal Membrane of the Mouth; each of these Glands has an Excretory Duct, which Perforates the Membrane of the Mouth at a small *Papilla*, by which a Saliral Humor is Emitted into the Mouth: The like Glands may be seen on the Inside of the Cheeks.

n, The Tip of the Nose.

o, The Hairs of the *Palpebræ*.

Fig. 9.

The External Surface of One of the *Glandulæ Tonsillæ* or *Amigdalæ*, where the many large *Foramina* of its Excretory Ducts Appear, by which its Pituitous Matter is Discharg'd into the *Fauces*, which joins with the Aliment in its Descent to the *Gula*.

Fig. 10.

The *Receptaculum Chyli* Fill'd with Quick-silver, with the Neighbouring Lymphatick Glands remaining in their Proper Situation, together with the Adjacent Parts; as I could make a Sketch of them whilst I was Demonstrating the Parts of a Humane Body to some Worthy and Ingenious Gentlemen, when Professor *Bidloo* favor'd me with a Visit.

A A, The Kidneys.

a a, The Emulgent Veins, of which that of the Right Side is Lower than the Left.

B, The Ascending Trunk of the *Vena Cava* Distended with Wind; the Lower Part of which is Compreſt by the Iliack Artery of the Right Side.

b, The Trunk of the *Vena Cava* Cut from its Entrance into the Liver and Ty'd.

C C, Parts of the Two Iliack Veins, which may be seen Distended with Wind below the Right Iliack Artery, as the *Vena Cava* is above; The External Iliack Veins, as well as the Crural Veins, lie immediatly under the Trunks of the Arteries that Accompany them, till they Pass by the Lower Part of the *Musculus Triceps* and *Os Femoris*, to the Ham, where the Vein is Uppermost and the Artery Passes Underneath, after the same Manner the Great Trunks of Veins and Arteries do in other Parts. This Contrivance in Nature of Placing the Trunks of the Iliack and Upper Parts of the Crural Arteries on the Veins, is an Admirable Artifice to Accelerate the Ascention of the Blood to the *Vena Cava* and Heart, as it Arises from the Inferior Parts, by means of the Pulsation of the Arteries. If you Inject the Arteries with Wax and afterwards Fill the Veins with the same, you will see by the Figure of the Wax Contain'd in the Veins, what Effect the Pulsations of the Arteries have on them, in Order to Promote the Ascention of the Refluent Blood from below. In this Compreſſure made by the Iliack Artery of the Right Side, on the Inferior Part of the *Vena Cava* its Contain'd Blood is Forc'd to Ascend towards the Heart, the Valves in the Crural Veins Opposing its Descent: By this means also the *Pondus* of the Refluent Blood from below is Lessen'd, to the End its Motion may be the better Carri'd on at the Extremities of the Vessels in the Legs and Feet, and a Kind of a Pulsation made by the *Vena Cava*, whereby the Lymphatick Lumbal Gland R R, lying between it and the Bodies of the *Vertebræ* is gently Compreſt, of which hereafter.

D D, The Ascending Trunk of the *Vena Cava* below the Kidneys.

d d, The Iliack Arteries.

E, The Trunk of the *Coliaca Arteria* Cut off.

F, The Trunk of the *Mesenterica Superior* in like Manner Cut off.

e e, The Arteries of the *Testes*; the Right Appearing at its Origin from the Trunk of the *Arteria Magna* D; the Left Passing thro' the Lumbal Gland, Q.

f f, The Spermatick Veins near their Entrance into the Trunk of the *Vena Cava* of the Right Side, and Emulgent Vein of the Left; where there are Valves Plac'd, which Hinder the Descent of the Blood from those Large Vessels into these Veins.

g g, The Upper Parts of the Ureters Distended with Wind;

h h, Their Lower Parts, as they Pass to the Bladder of Urine not Extended: About these Parts of the Ureters, as they Descend over the Iliack Arteries, we frequently find them Dilated by Reason of the Pulsation of those Arteries, which Prevents the free Descent of the Urine, and especially Stones and Gravel, both which often Pass them: Tho' more than once I have Seen One of the Ureters compleatly Obstructed by Small Stones in this Part.

i, Some Fat Remaining on the Ureter, as it Passes out of the Kidney.

G G, The *Glandulæ Renales* or *Capsulæ Atrabilares in Situ*.

H H, The Lower Fleshy Part of the Diaphragm, which Arises from the *Vertebræ* of the Loins.

I, The *Fissura* of the Diaphragm, in which the *Gula* Passes to the Stomach.

K, The Bladder of Urine Distended with Wind.

L, The *Urachus* Turn'd down.

M M, The *Musculi Psoi Magni*.

N. The *Sacculus Chyliferous* or *Receptaculum Chyli* (Expreſt A. *Fig.* 11.) as it Appears when Fill'd with Mercury, after freeing the *Vena Cava*, B, from its Accompanying the *Arteria Magna*, D.

O, A Large Trunk of the *Vena Lactea Secundi Generis*, by which the Mercury was Injected.

P, The Tube which Convey'd in the Mercury.

Q Q, The *Glandula Lumbalis* of the Left Side, Lying partly on the Trunk of the *Arteria Magna*.

R R, The Right Lumbal Gland, Lying partly under the Trunk of the *Vena Cava*.

S S, Some Communicant Branches of Lymphaducts between the Two Lumbal Glands.

t t, The Lymphaducts Arising from the Inguinal Glandules, *App. Fig.* 1. S S. as well as Divers other Lymphatick Glandules Lying on the Iliack Branches of Blood-Vessels (C C d d:) These Discharge all the *Lympha*, arising from the Inferior Parts into the Lumbal Glands, whence it Passes immediatly into the *Receptaculum Chyli*, and is afterwards Convey'd by the Thoracick Duct (*Fig.* 11. M M.) into the Subclavian Vein (*Fig.* 12. H L:) This is the Ordinary Course of the *Lympha*, arising from the Inferior Parts in its Way to the Mass of Blood again. Hence it Appears, the *Lympha* of the Inferior Parts Meets with the Chyle in its *Receptaculum*, whereby the Chyle is there not only farther Dilated, but its Ascention is Accelerated towards the Subclavian Vein, by an Additional *Impetus* from the Ascending *Lympha*.

Here we can't but take Notice of a Considerable Artifice in Nature in the Disposition of these Lymphatick Lumbal Glands, whereby the Progress of the *Lympha* is Promoted towards the *Receptaculum Chyli*. As the Lymphaducts Pass from the Inferior Parts, they Accompany the Trunks of the Arteries, by whose Continual Motion of *Systole* and *Diastole*, the Ascent of the *Lympha* is Promoted as well as the Blood; but when the *Lympha* Arrives at the Lumbal Glands, the Pulsation of the Ascending Trunk of the Great Artery being not sufficient (by reason those Glands are much Larger than the Exterior Surface of that Artery can give a Sutable Impulse to;) One of the Lumbal Glands R R, is Plac'd under the *Vena Cava* B, or between it and the *Vertebræ Lumbares*, by which its *Vesiculæ* are gently Compreſt, and their Contain'd *Lympha* is Push'd on towards the *Receptaculum Chyli*.

T T, The Spermatick Vein and Artery on both Sides Involv'd in the Duplicature of the *Peritonæum* as they Pass towards the *Testes*.

Fig. 11.

The Lumbal Glandules with the *Receptaculum Chyli* and Part of the Thoracick Duct, &c. Fill'd with Mercury and Free'd from the Body.

A, b b, The *Receptaculum Chyli* Compos'd of Three Trunks; One of which A, is very Large Expreſt at N, *Fig.* 10. the other Two are much less, and lie immediatly under the Trunk of the Great Artery D, *Fig.* 10: This Division of the *Receptaculum Chyli* into Three Trunks has not been taken Notice of, which Makes me Suspect the Descriptions we have hitherto had of it, have been Taken from Quadrupedes; where by Reason of its Horizontal Position, it is likely One *Sacculus Chyliferus* may be Sufficient; but in Men, in whom the Thoracick Duct, and *Receptaculum* Inclines to a Perpendicular Position, it seems to be a necessary Contrivance that it should be Divided into Three Channels (especially before it intirely Passes under the Trunk of the Great Artery) the better to Support the Chyle and Lymphe in their Ascending Progress.

a, The Trunk of a Lymphaduct Arising from the Diaphragm.

B, The *Ductus Thoracicus* above the Diaphragm, where it Passes between the Descending Trunk of the *Arteria Magna* and Bodies of the *Vertebræ Thoracis*; which Disposition of it is very necessary, to the End the Pulsation of the Artery may continually Press this Duct, and thereby Hasten the Ascent of its Contents.

C, A Trunk of One of the *Vasa Lactea Secundi Generis*, Expreſt *Fig.* 10. O, by which the Mercury was Injected.

c, A Considerable Double Valve, which Hinders a Retrocession of Chyle and *Lympha* in this Lacteal Vessel.

D, The Surface of the Left Lumbal Gland Plac'd on the *Arteria Magna*.

d, Another Small Trunk of the *Vasa Lactea Secundi Generis*, with a Small Gland of the Mesentery, from whence it Arises.

E, The Lymphaducts, which Arise from the Inferior Parts and Empty themselves into the Left Lumbal Gland.

F, The *Glandula Lumbalis* of the Right Side Plac'd under the *Vena Cava*.

G H, The Lymphaducts of the Inferior Parts, which Empty themselves into the last mention'd Gland.

I, A Large Lymphaduct, which Discharges its self into the *Receptaculum Chyli Majus*.

K L, The Communicant Branches of Lymphaducts between the Right and Left Lumbal Glandules.

M M, The Thoracick Duct where its Valves, which Hinder the Descent of the Chyle and *Lympha*, are faintly Expreſt.

N N, Divers Divisions and Inosculations of this Duct, whereby the Ascention of the Chyle may be the better Carri'd on.

O, Divers Lymphaducts, which Arise from the Lymphatick Glands on the Back-parts of the Lungs, and are the Exporting Lymphaducts of those Glands; their Importing Lymphaducts Spring from the Lungs themselves and Adjacent Parts.

Fig. 12.

The Thoracick Duct at its Entrance into the Subclavian Vein, with its Lymphaducts Injected with Wax.

A, The Thoracick Duct where it Leaves the Descending Trunk of the *Arteria Magna*, and Accompanying the *Gula* as it Passes towards the Left Side of the Bodies of the Upper *Vertebræ* of the *Thorax*, in its Way to the Subclavian Vein, where that of the Former Figure is Cut off and Ty'd.

B B, Two Lymphaducts, which Sprang from the *Thymus*.

C, A Division and Inosculation of the Thoracick Duct.

D, A Large Lymphaduct, whose Extremities Arise partly from the *Thymus* and partly from the Right Subclavian Gland.

E, The Left Subclavian Lymphatick Gland. The Subclavian Glands (tho' not Mention'd by any Author I Know of) are Two Large Glands Plac'd under each Clavicle, and seem to be One of those Belonging to the Concatenation of Glands of the Internal Jugular Vein: They Receive their Importing Lymphaducts from the Muscles of the Neck and Glands last Mention'd on the Jugular Veins, and perhaps from the Thyroid Gland.

F G, The Exporting Lymphaducts of the Subclavian Gland, which Empty themselves into the Thoracick Duct.

H, The Large Trunk of the Thoracick Duct near its Entrance into the Subclavian Vein.

I, The External and Superior Part of the Subclavian Vein.

K, Part of the Axillary Vein not Fill'd with Wax from the Thoracick Duct by Reason of the Valves.

L, Parts of the Internal Jugular and Cervical Veins Cut off.

M, The Wax Injected by the Thoracick Duct Cut Transversly, with the Trunk of the Vein as it Passes towards the Heart.

Fig. 13.

A Lymphatick Gland with its Importing and Exporting Lymphaducts Fill'd with Mercury.

A, The Gland whose *Vesiculæ* are Distended with Mercury.

E, The Importing Lymphaduct, by which the Mercury was Injected into the *Vesiculæ Glandulosæ*;

D D, Its Ramifications before they Enter the Gland.

C C, The Ramifications of the Exporting Lymphaducts, as they Arise out of the Gland and Unite in One Trunk, Call'd

B, The Exporting Lymphaduct, which Passes either into the *Receptaculum Chyli* immediatly, or Thoracick Duct, or else into another Lymphatick Gland.

Besides this Communication of Lymphaducts by the Mediation of Lymphatick Glands; the Trunks of the Lymphaducts themselves are frequently Inosculated with each other, and tho' they commonly Enter into the next Lymphatick Gland (where they Meet with a Fresh Supply of Lymphe Separated from the Blood-vessels of the Gland, as well as an *Impetus* from thence) yet it sometimes Happens there is a Communicant Branch from the Importing to the Exporting Lymphaduct, as Appears in the Following Figure.

Fig. 14.

A, The Gland Fill'd with Mercury as in the Foregoing Figure.

C, The Importing,

B, The Exporting Lymphaduct.

D D, The Communicant Branch.

APPEN-

Fig: 8.

Fig: 9.

Fig: 12.

Fig: 14.

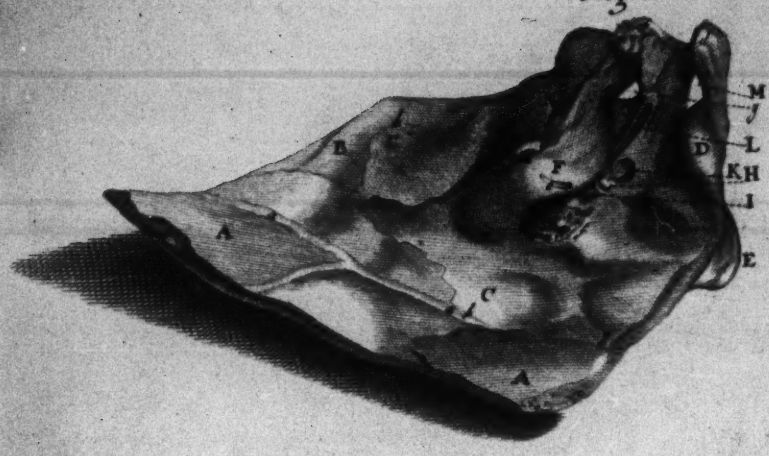
Fig: 13.

Fig: 10.

Fig: 11.

Gucht sculp:

Fig: 16.



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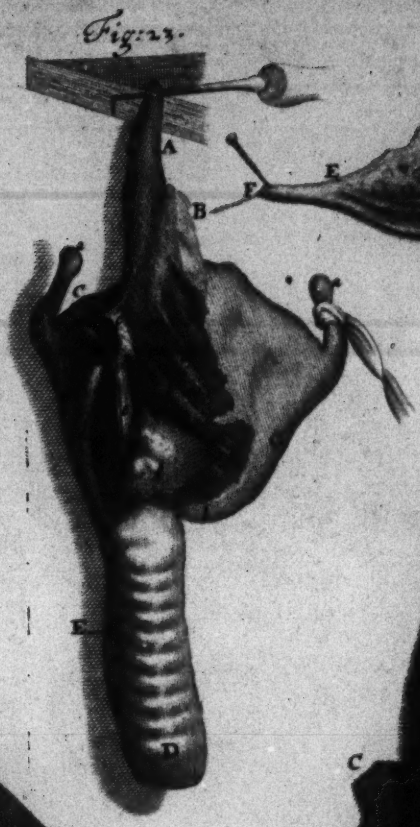
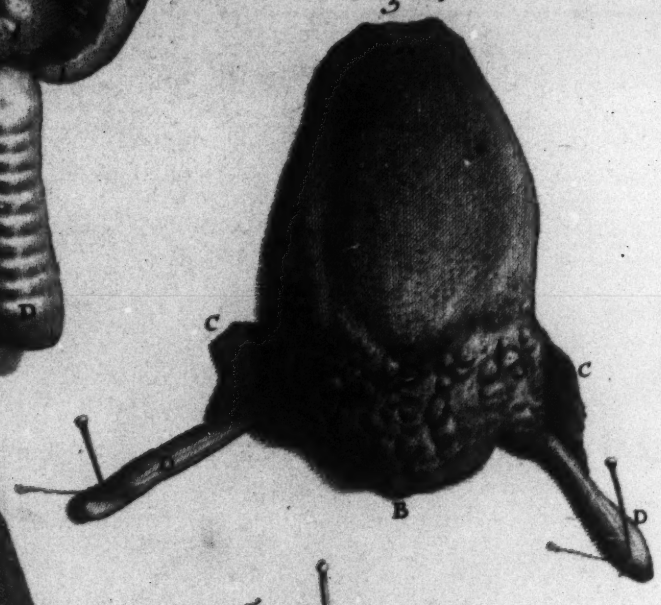


Fig: 25.

Fig: 24.



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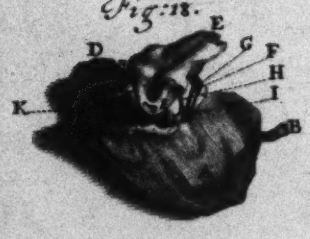

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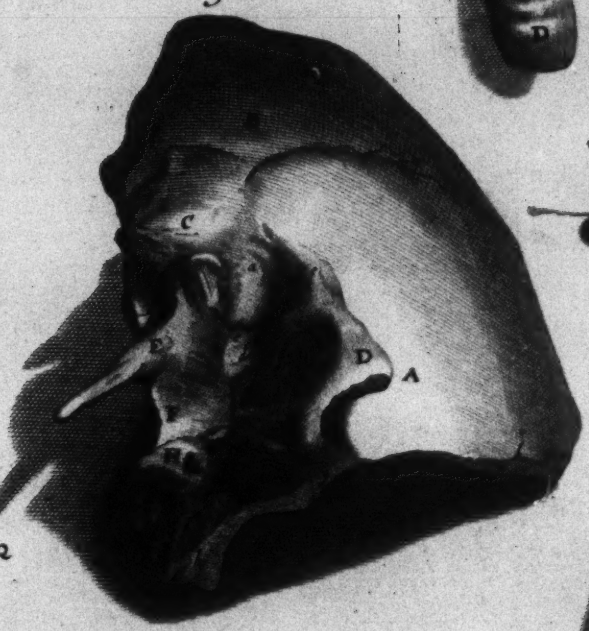

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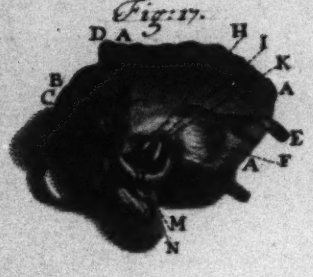

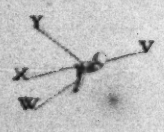

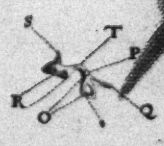

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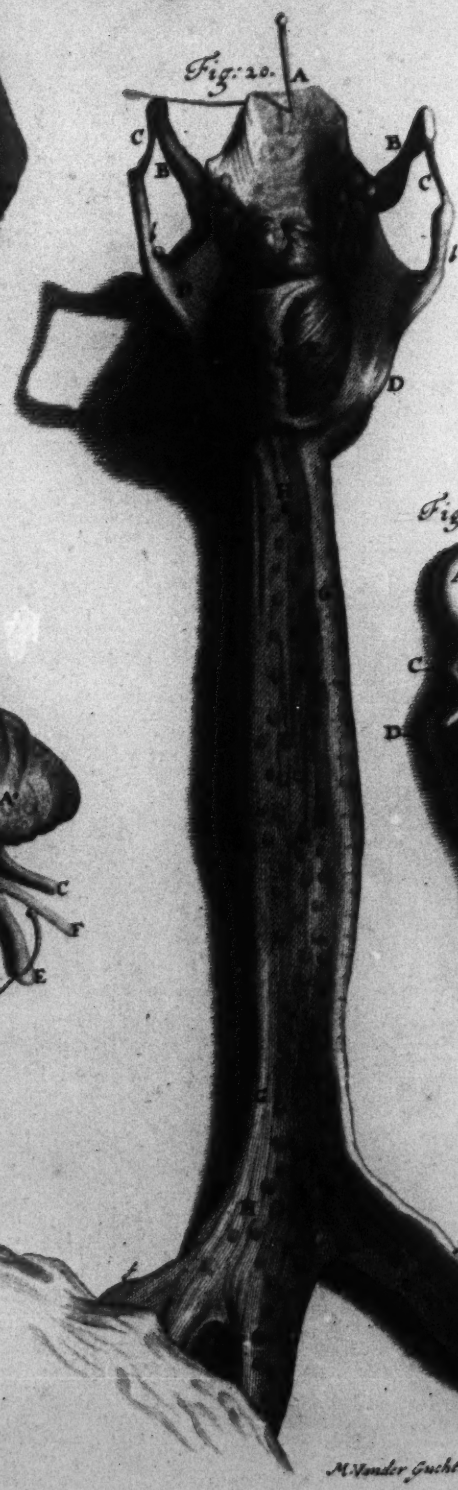

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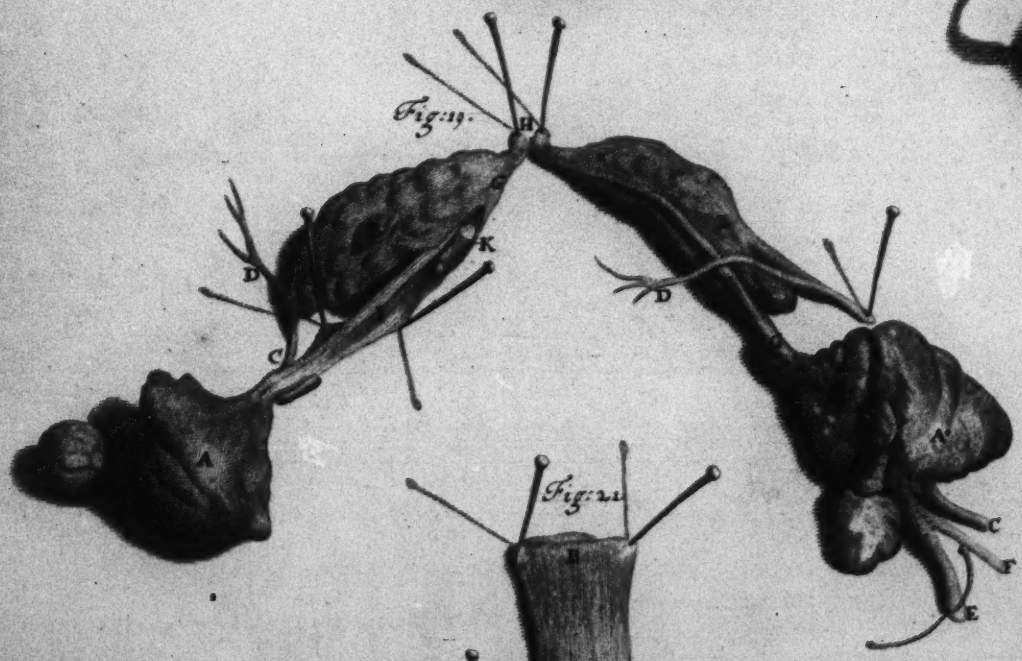

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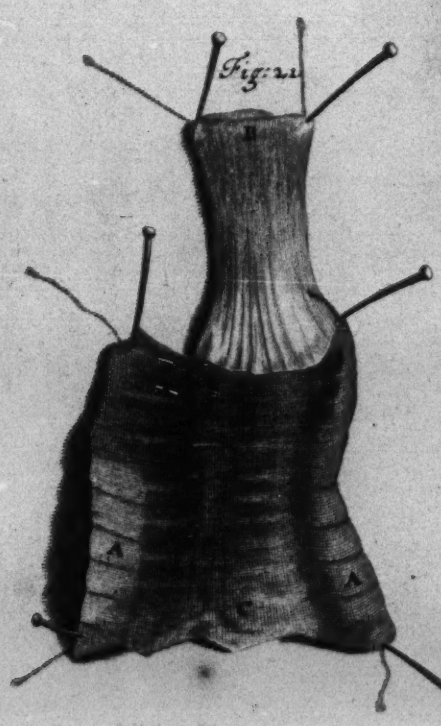

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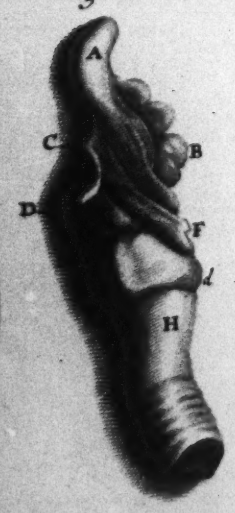


M. Vander Gucht Sculp:

APPENDIX.

THE FIFTH TABLE.

Fig. 15.

DIVERS Parts of the Organ of Hearing of a Man.

A, The External Convext Part of the *Os Temporale*.

B, Part of the *Os Sincipitis*.

C, The *Processus Mastoides* Continuous with the *Os Temporum*.

D, Part of another Process of the *Os Temporale*, which makes the *Os Jugale*.

E, The *Processus Styloides*.

F, Part of the *Os Temporum*, behind which the Carotide Artery passes towards the Brain.

G G, Part of the *Os Sphenoides*.

H, An Acute Process of the *Os Sphenoides*, whence the Muscles of the *Gargarum* Spring.

I, A Perforation between the *Os Sphenoides* and *Temporum*, by which the *Ductus à Palato* passes into the *Tympanum*.

K, The Sixth *Foramen* of the *Os Sphenoides* which is near the Root of the *Processus Pterygoides*; by which a Branch of the Fifth Pair of Nerves passes out of the *Cranium*. *Vid. Tab.* 92. *Fig.* 2. Y.

a, The Upper-part of the *Porus Auditorius* or Passage from the External Ear.

b b, The Breaking off of the Bone which Composes the Lower-part of the *Meatus* or *Porus Auditorius*.

c, The *Musculus Externus Auris*, by some call'd *Laxator Externus*. This Small Muscle is plac'd under the Glandulous Membrane of the *Porus Auditorius*, which Separates that Matter call'd the *Ear-Wax*: Its Beginning is Fleshy on the External Margin, at the Upper-part of the *Porus*, soon becoming Tendinous, passes to its Broad Tendinous Expansion on the External Surface of the *Membrana Tympani*. When it Acts, it draws the *Membrana Tympani* towards a Plan Outwards, together with the Handle or Long Process of the *Malleus*; by which means the Great Concussion made in the Outward Air, is Hindred from Violating the *Membrana Tympani*; which at that Time is Relaxt.

d, The Long Process of the *Malleus*, call'd its *Manubrium*, lying immediately under the *Membrana Tympani*, and is Contiguous to it.

e, The *Membrana Tympani* or Thin Transparent Membrane, commonly call'd the *Drum of the Ear*.

f, A *Sinus* in the *Os Temporum* for the Articulation of the *Processus Condyloides* of the Lower Jaw.

g, The Conjunction of the *Os Sphenoides* with the *Os Temporum*.

h h, The Edges of the last mention'd Bones Saw'd off.

* The Suture between the *Os Temporum* and *Sincipitis*.

Fig. 16.

The Organs of Hearing as they are made to Appear on the Internal Parts of the same Bones, Represented in the foregoing Figure.

A A, The Inside of the Lower-part of the *Os Sincipitis* which lies on the Upper-part of the *Os Temporum* next the Brain.

a a, The Channels in the Bone which Receive the Blood-Vessels lying on the *Dura Mater*.

B, Part of the *Os Occipitis*.

b b b, The Conjunction of the *Os Temporum* with the Bones of the *Sinciput* and *Occiput*, call'd *Sutura Squamosa*.

C C, The *Os Temporum* next the Brain.

c, That Part of the *Os Temporum* or *Processus Petrosus* of that Bone, which Touches the Anterior *Appendix* of the *Os Occipitis*.

D, Part of the *Os Sphenoides*.

d, That Part of the *Os Sphenoides* at the Upper-part of the *Processus Pterygoides*.

E, Part of the *Os Jugale*.

e, The External Semicircular Duct of the *Os Petrosum* Open'd; Expreſt at k, *Fig.* 18.

F, The External Surface of the *Os Petrosum*, to which the *Dura Mater* firmly Adheres.

f f, The External *Lamina* of the *Os Petrosum* cut off with a Chizel, to shew the Two Internal Muscles of the *Malleus*, Part of the Cavity of the *Tympanum* and the Articulation of the *Malleus* with the *Incus*, with the *Cavernulæ* of the *Os Petrosum* which Communicate with those of the *Processus Mastoides*.

G, A Channel on the *Os Petrosum*, in which the Superior Long and Narrow *Sinus* of the *Dura Mater*, passes from the *Sella Turcica* to the Tortuous Part of the Lateral *Sinus*.

g, The Perforation in the *Processus Petrosus*, by which the Carotide Artery passes in a Tortuous Manner towards the *Sella Turcica* to the Brain.

H.... The Head of the *Malleus* Articulated with the *Basis* of the *Incus*.

I... The *Basis* of the *Incus* and its Short Process *in Situ*.

K... The *Musculus Obliquus* or *Semicircularis Auris*; this *Du Verny* Describes instead of the *Laxator Externus* Expreſt at c, in the preceding Figure: It is plac'd in a Proper Furrow of the Bone which is above the Bony Part of the Channel, from the Palate to the Ear, whence it Marches Obliquely to its Insertion at a Small Acute Process near the Neck of the *Malleus*: When it Acts, it draws the Handle of the *Malleus* Sideways towards the *Os Jugale*; whereby it Assists the External Muscle, in making the *Membrana Tympani* capable of Resisting any great *Impetus* made in the Outward Air, from Injuring that Membrane.

L.... The *Musculus Internus Tympani Auris*: The Fleshy Part of this, like the Former, is Inclos'd within a Bony Channel of the *Os Petrosum*, lying on the Upper Side of the Bony Part of the Duct *A Palato ad Aurem*, as here Expreſt; when it is Advanc'd to the Upper Side of the *Tympanum*, it is Converted into a Small Tendon which passes out of its Bony Channel, not unlike a Rope from a Pully, to the Opposite Part of the *Tympanum*, and is Fasten'd to the Long Process of the *Malleus*. This Muscle Arises from that Part of the *Os Sphenoides* that Touches the *Os Petrosum*, and Helps to Frame the *Aqueduct* or *Meatus à Palato ad Aurem*. The Strong Membrane which Lines the Bony Channel in which this Muscle is Entertain'd, passes out with its Tendon to the Internal Acute Process of the *Malleus*, where the preceding Muscle is Inserted. *Placentinus* seeing the Tendon of the Former Muscle at its Insertion, and not Discovering that Muscle, suppos'd it belong'd to the Muscle last mention'd, which he Describes and Figures with Double Tendinous Terminations. When this Internal Muscle of *Eustachius* Acts, it draws the Long Process of the *Malleus* towards the *Foramen Ovale* and *Rotundum*; whereby the External Surface of the *Membrana Tympani* becomes Concave, and the Membrane it self much Extended, which is Necessary when Sounds are Low.

M, The *Foramen* of the *Os Sphenoides*, by which a Branch of the Fifth Pair of Nerves, passes out of the Skull.

N, The *Foramen* of the *Processus Petrosus* or *Os Petrosum*, by which the Auditory Nerve passes to the Organ of Hearing.

Fig. 17.

The External Surface of the *Os Temporum* of the Right Side of a full Grown *Fœtus*.

A A A, Its Superior and Anterior Margin which was Contiguous to the *Os Sincipitis* and *Sphenoides*:

B, Its Posterior Part which Touches the *Os Occipitis*.

C, A Large *Foramen* by which the Blood-Vessels Enter the Bone; this *Foramen* Appears at the Root of the Mammiform Process of the Adult; which Process do's not Appear in the *Fœtus*.

D, A Process of this Bone in the *Fœtus* at the meeting of the *Os Sincipitis*, with the *Os Occipitis*, which is not Conspicuous in the Adult.

E, Part of the *Os Jugale* cut off.

F, The *Sinus* in which the Condyloide Process of the Lower Jaw, is Receiv'd.

G, That Part of the *Os Temporum*, call'd *Processus Petrosus*; wherein the Three Semicircular Ducts and *Cochlea* are Excavated.

H... The Long Process of the *Incus* which is Articulated to the Upper-part of the *Stapes*, by the Mediation of the *Os Orbiculare*.

I.... The *Os Orbiculare* and *Stapes*, Articulated to the Extremity of the Long Process of the *Incus*.

K.... The Long Process of the *Malleus* which is Connected to the Internal Surface of the *Membrana Tympani*.

By this mutual Articulation of the Four Little Bones of the *Tympanum* with each other, and the Connection of the Internal Surface of the *Membrana Tympani*, to the Long Process of the *Malleus*; whatever Motions are made by the Outward Air which shakes that Membrane, the *Malleus* is necessarily Mov'd, consequently the *Incus* and *Stapes*: Now the *Basis* of the *Stapes* exactly Covering the *Foramen Ovale*, the Air contain'd in the Labyrinth and *Cochlea*, is thereby necessarily Agitated, and the Effects of the Various Tremulous Motions of the *Stapes*, are Represented to the Expansions of the Auditory Nerves, in the Labyrinth and *Cochlea*.

L, The *Circulus Osseus* of the *Fœtus*.

M..., Part of the *Cochlea in Situ*, Open'd.

N.... The Tendon of the *Musculus Stapedis* Descending from the *Os Petrosum*, to its Implantation on the Upper-part of the *Stapes*, whereby it Draws the *Stapes* Upwards towards the *Foramen*, and Shuts it.

O, The *Stapes*.

P, The *Orbiculum Quarsum* or *Orbiculare*.

Q, The *Musculus Stapedis* Free'd from its Bony Pipe, Excavated in the *Os Petrosum*, near the Bottom of the *Tympanum*. The Pipe which contains the Fleshy Part of this Muscle is Less than the Sixth Part of an Inch in Length, and is much Larger than the *Foramen*, by which its Tendon passes to its Implantation in the *Stapes*.

R-,- The *Basis* of the *Incus* where the Head of the *Malleus* is Articulated;

S.-- Its Short Process which Rests on the *Os Petrosum*;

T,- Its Long Process that is Articulated with the *Stapes*.

V.- The Head of the *Malleus* which is Articulated with the *Incus*.

W... That Part of the Long Process of the *Malleus*, where the Internal Muscle of the *Tympanum* of *Eustachius* is Inserted.

X.. The External Acute Process of the *Malleus*, where it Begins to Cleave to the *Membrana Tympani*;

Y --- Its Internal Acute Process, to which the *Musculus Obliquus* or *Externus* of *Du Verny*, is Implanted.

Fig. 18.

The Internal Face of the same *Os Temporum* next the Brain, Represented in the preceding Figure

A, The Internal Concave and unequal Surface of the Bone next the *Dura Mater*.

B, Part of the *Os Jugale*.

C, The Porous Substance of the Bone as it Appears after it's cut away to shew its Cavity, call'd *Tympanum*.

D, The Posterior Part of the *Os Temporum* which Touches the Occipital Bone.

E, The Extremity of the *Processus Petrosus* next the Anterior *Appendix* of the *Os Occipitis*.

F... The Lower-part of the *Annulus Osseus*.

G... Part of the *Musculus Obliquus Auris*, left at its Insertion.

H.-. The Long Process or Handle of the *Malleus*.

I... Part of the *Incus* where it's Articulated with the *Malleus*.

K... The *Os Petrosum* cut away into the Cavity of the *Tympanum* F, G, H, I, K. The *Tympanum* Open'd: Besides the Membrane of the *Tympanum* at the Extremity of the *Meatus Auditorius*; the Cavity of the *Tympanum* is Lin'd with a Thin Transparent Membrane, which (I am apt to think) is also Extended on the *Malleus*, *Incus*, *Os Orbiculare*, and *Stapes*, since the Accurate *Ruysch* has Observ'd divers Blood-Vessels on those Bones.

k, The Superior or External of the Three Semicircular Ducts Free'd from the Adjacent Part of the *Os Petrosum*, and Open'd.

l, The Middle Semicircular Duct also Clear'd and Open'd.

m .... Part of the Third and most Internal Semicircular Duct also partly Open'd.

n, The *Foramen* by which the Auditory Nerve Enters the *Os Petrosum*.

Fig. 19.

The Salival Glandules of the Lower Jaw, together with those under the Tongue, Dissected.

A A, The Two Inferior Maxillary Glands, which are Represented *in Situ*, *Tab.* 15. *Fig.* 1. M M, Compos'd of divers *Lobuli*, Inclos'd in One Membrane.

B B, The *Glandulæ Sublinguales* Cover'd with their Common Membrane; One of which Glandules is Represented *in Situ*, in the last mention'd Table, *Fig.* 2. W.

C C, The Trunks of the Two Arteries which Spring from the Carotides, and Convey Blood into the above mention'd Salival Glands.

D D, Two Branches of Arteries, Arising from the last mention'd Trunks, which pass to the Tongue. Besides the Branches now mention'd, each of these Large Trunks sends out another considerable Branch Expreſt *Tab.* 12. *Fig.* 4. F. which is Employ'd on the Muscles of the Face.

E, The Trunk of the Vein Arising from the Extremities of the Arteries of those Glands, and those of the Neighbouring Parts.

F, A Branch of the Fifth Pair of Nerves.

G G, The Salival Ducts of the Inferior Maxillary Glands, as they pass to their Excretory Pores at the Extremity of each *Papilla* plac'd under the Tongue.

H H, The Two *Papillæ* last mention'd, where the Excretory Ducts of the Sublingual Glands also empty themselves at the same Pores with the Two Salival Ducts. This Protrusion of the Salival Ducts which Frame the *Papillæ*, is a necessary Contrivance to Hinder any Particle of the Masticated Aliment from Entring those Ducts, or the Excreted *Saliva* from Repassing them.

I, The Salival Duct of the Right Side Open'd according to its Length, and Expanded.

K, A Small Stone as it Appear'd lying in the above mention'd Duct: It was of a bright Yellow Colour, not unlike that of *Arumpigmentum*. In Dissecting these Parts the Lesser End of it happen'd to Break off, as it is here Expreſt.

Fig. 20.

The Internal or Back Side of the *Larynx*, with the *Aspera Arteria* and Part of the *Bronchia*.

A, The Concave Part of the *Epiglottis* as it Appears when Pinn'd up.

a a, Divers Small Glands at the Root of the *Epiglottis*, which are Cover'd with a Loose Membrane which makes the *Glottis*, and is Continued to that of the Inside of the Mouth, *Fauces*, and *Gula*.

B B, The Extremities of the *Os Hyoides*.

C C, The Ligaments which Fasten them to the Two Superior Long Processes of the Scutiformal Cartilage.

D D, The Internal Concave Part of the Scutiformal Cartilage.

b b, The Two Long and Superior Processes of the Scutiformal Cartilage.

c c, The Superior Parts of the *Arytenoidal* Cartilages which were Cover'd with the Loose Membrane above mention'd, and Compose the *Glottis*.

d, The Back-part of the Annular Cartilage.

E E, The *Musculi Cricoarytenoidei Postici* which Open the Arytenoidal Cartilages c c, by Drawing them Backwards.

F, The *Musculus Arytenoideus* which Draws the Two Arytenoidal Cartilages nearer each other, and Streightens the *Rimula*.

G, The Cartilaginous Part of the Wind-Pipe Forewards.

H H, The Posterior and Membranous Part of the Wind-Pipe next the *Gula*.

e e, Divers Small Glands which Appear on this Membranous Part of the Wind-Pipe, and Beginning of the *Bronchia*. The Excretory Ducts of these Glands, I am perswaded, Discharge themselves into the Wind-Pipe and *Bronchia*, and serve to Moisten their Cavities, and Defend them from the Inspired Air, whence Arises Part of that Moisture which is Rejected in Expiration; a great Part of it Arising also from the *Salivæ*, as the Air passes the Mouth; whence it happens, less Moisture passes with the Expired Air by the *Foramina Narium* only, than when we Expire thro' the Mouth; and consequently the *Halitus* is more or less Wet, as the Mouth is more or less Open'd.

f f, The Beginning of the *Bronchia*.

The Glands above mention'd are most commonly Affected in Catarrhs, and most of those Desluctions on the Wind-Pipe which cause frequent Coughing.

Fig. 21.

A Portion of the Wind-Pipe Open'd and Pin'd out to shew its Inside.

A A, Its Cartilages Divided according to the Length of the Wind-Pipe.

B, Its Internal Membrane Compos'd of Longitudinal Fibres, Rais'd: This Draws the Cartilages nearer each other, and Shortens the Wind-Pipe.

C C, The Transverse Order of Fibres lying on the Membranous Part of the Wind-Pipe next the *Gula*: These Pull the Extremities of the Little Semicircular Cartilages of the Wind-Pipe nearer each other, whereby they Strenghten its *Canalis*.

Fig. 22.

The *Larynx* or Upper-part of the Wind-Pipe after the Scutiformal Cartilage is taken off, as it Appears Laterally.

A, The *Epiglottis*;

B, Its Root cut from the Tongue.

C, The Arytenoidal Cartilage.

D, The Back-part of the Cricoidal or Annular Cartilage;

d, Its Fore-part which Appears immediately under the *Thyroïs*.

E, The *Musculus Cricoarytenoideus Posticus*.

F, The *Thyreoarytenoideus* Free'd from the Scutiformal Cartilage, and left at its Insertion to the Arytenoidal Cartilage Lateraly.

G, The *Cricoarytenoideus Lateralis*; it Arising from the *Cartilago Cricoides*, and is Inserted to the *Arytenoides*. It Assists with its Partner in Opening the *Glottis* or Arytenoidal Cartilages.

H, Parts of the Wind-Pipe.

Fig. 23.

The *Larynx* together with a Portion of the Wind-Pipe.

A, The *Epiglottis*, by which the whole *Larynx* is Suspended, which makes it Appear much longer in this than in the preceding Figure.

B, That Part of the *Epiglottis* cut from the Root of the Tongue.

C C, The Sides of the Scutiformal Cartilage drawn from each other;

a a, Its Superior Long Processes Tied to the Extremities of the *Os Hyoides*.

b, One of its Two Inferior Short Processes Cleaving to the Annular Cartilage.

c, One of the Arytenoidal Cartilages (which Compose the *Rimula* of the *Larynx*,) Cover'd by the *Glottis*.

d d, The Annular Cartilage.

D, A Portion of the Wind-Pipe.

E, The Membranous Part of the Wind-Pipe which Touches the *Gula*, as it Descends to the Stomach.

e, The *Musculus Cricoarytenoideus Posticus*.

f, The *Cricoarytenoideus Lateralis*.

g, The *Thyroarytenoideus* Arising from the Internal Concave Part of the Thyroid Cartilage, and is Inserted to the Backpart of the Arytenoidal Cartilage above the Insertion of the *Cricoarytenoideus Lateralis*: This and its Companion on the other Side Acting together, Draw the Two Arytenoidal Cartilages nearer each other, and Streighten the *Rimula*: They Act in Deglutition, whereby any Part of the Aliment is effectually Hindred from Descending into the *Larynx*, by the Assistance of the *Epiglottis*, which at that Time exactly Covers the *Rimula*. These Muscles are so Strong in some, who by adequately Closing this Passage to the Wind-Pipe, can suffer Liquors pour'd into their Mouths to pass the *Gula*, without the Action of Deglutition, or the Assistance of the *Epiglottis*; as 'tis evident if they hold their Mouths Open and their Tongues Depreſt, whilst a Quantity of Liquor Descends from thence into their Stomachs.

The Use of the *Epiglottis* is to Cover the *Glottis* in Deglutition, so that the Aliment may Descend over it into the *Gula* and Stomach. Nor has the *Epiglottis* any Muscles to Depress it in that Action; but when the Tongue is Elevated, the Epiglot is necessarily Depreſt: Hence it is, when the Tongue is very much Intumised (as it is frequently in those who are in great Salivations) the free Action of Deglutition is Hindred, and the Patient is necessitated to Swallow even Fluids very leasurely, and not without Difficulty, especially if the Tongue is so Distended, that it cannot be Contain'd within the Teeth.

Fig. 24.

The Upper-part of the Tongue as it Appears when taken out with its Proper Muscles.

A, The Tip of the Tongue.

B, Its Root Free'd from the *Epiglottis* and *Os Hyoides*.

a a, The Vilous Nervous Bodies of the Tongue, which stand Obliquely from the *Apex* or Tip of the Tongue towards its Root.

b b, The Glands plac'd at the Root of the Tongue, whose Excretory Pores may be seen to Open in their Middle, whence a Salival Humour is emitted, not unlike the Glands of the *Fauces* and *Foramina Narium*, and those plac'd in the Cheeks and Lips.

C C, The *Musculi Ceratoglossi* Expreſt *in Situ*, *Tab.* 14. *Fig.* 1. D D, on one Side.

D D, The *Styloglossi* in like Manner Expreſt, *Tab. ibid. Fig. ibid.* C.

Fig. 25.

The *Vesiculæ Seminales* with Part of the *Vas Deferens*, and their common Duct which passes thro' the *Prostatæ* into the *Urethra*, Open'd.

A A, Part of the External Surface of the *Vesiculæ Seminales*, where the Ramifications of Blood-Vessels are Conspicuous to the Naked Eye.

B, C, The Larger Cells of the *Vesiculæ Seminales* and *Vas Deferens*.

D, The *Vas Deferens* Open'd.

b, c c, The Lesser Cells of the *Vas Deferens* and *Vesiculæ Seminales* within the Larger.

E, The Place where the *Vas Deferens* and *Vesiculæ Seminales* Communicate with each other.

F, The common Duct of the *Vesiculæ Seminales* and *Vas Deferens* which passes thro' the *Glandulæ Prostatæ*, and Discharges the *Semen* into the *Urethra*.

APPEN-

APPENDIX.

THE SIXTH TABLE.

Fig. 26.

REPRESENTS the Internal Surface of the *Basis* of the *Cranium*, with the Inferior Part of the *Dura Mater* remaining on it, done immediately after the Brain was taken out; the Blood-Vessels being first Injected with Wax.

A A, The Edges of the Skull, as they Appear when its Upper-part is Saw'd off.

B B, Part of the *Dura Mater* lying on the *Basis* of the Skull.

C C, The Two Lateral *Sinus's* fill'd with Wax in their Declive and Tortuous Progress, to their Egress at the *Basis* of the Skull.

d d, The Two Superior Long *Sinus's* which Communicate between the Circular *Sinus* 22, and Lateral *Sinus's*.

e e, Two Inferior short *Sinus's*, which also Discharge themselves into the Two Lateral Ones at their Egress.

f, The *Os Ossis Galli* or Middle Process of the *Os Ethmoides* or *Cribriforme*, by which the Olfactory Nerves pass to the *Foramina Narium*.

g g, Divers Blood-Vessels of the *Dura Mater*, not Injected with Wax, by reason of their Smallness.

h h, The First Arteries of the *Dura Mater* not fill'd with Wax.

i i, The Second Branches of the Arteries of the *Dura Mater*: These Arise from the Catotides before they Enter the Skull, and pass thro' a small *Foramen* Reckon'd a Fifth of the *Os Sphenoides*, at the Root of an Acute Process of that Bone, whence the Muscles of the *Gargareon* Spring: After these Arteries Enter the Skull, their Larger Branches lie on the Exterior Surface of the *Dura Mater*, as Express'd *Tab.* 6. *Fig.* 1, 2, and 4, which are Entertain'd in Furrows on the Internal Surface of the *Cranium*, Express'd *Tab.* 91. *Fig.* 2. F F: As the Branches of these Arteries become still more and more Divided, and less on the Upper-part of the *Dura Mater*, so their Channels on the Top of the Skull scarce Appear; nor do any of them Enter the Longitudinal *Sinus*, as Dr. *Ridley* has well Obserr'd. Besides those Branches of these Arteries which carry Blood to the *Dura Mater*, there are others also which convey Blood to the *Medullum* of the Skull A A, and do Inosculate with the Arteries of the Hairy-Scalp. The Branches of these Arteries on the *Dura Mater*, are Accompanied with Veins, which do not pass out of the *Cranium* at the same Perforation where the Arteries Enter'd, but leave them where the Inferior and Foremost Angle of the *Bregma* Touches the *Os Sphenoides* and *Tamporum* Internally, and afterwards pass between the Two Internal Long Processes of the *Os Sphenoides* and *Os Frontis*, and March out at the Second Perforation of the *Os Sphenoides* or Large *Rima*, *Tab.* 89. *Fig.* 2. C D, I. Nor do the Larger Branches of these Blood-Vessels always continue their whole Progress between the Skull and *Dura Mater*, but Parts of them March in Bony Inclosures of the Skull, especially at the Inferior Angle of the *Bregma* above mention'd, and afterwards pass out again in their Usual Manner: Nor are the Perforations in the *Os Sphenoides* always Regular where these Arteries of the *Dura Mater* Enter: They sometimes March thro' the Sixth Perforations of the *Sphenoides*, where the Branches of the *Par Quintum Nervorum* pass out; at other times their Perforations are at the Conjunctions of the *Os Sphenoides* with the *Ossa Petrosa*, between the Acute Processes of the First nam'd Bone, and Perforations of the Latter where the Carotide Arteries Enter the Skull.

k, The Third Branch of the Arteries of the *Dura Mater* Enter the *Cranium*, where the Eighth Pair of Nerves pass out: I don't remember I ever saw any Branches of Veins Accompany these Arteries.

Besides these Arteries of the *Dura Mater*, I don't doubt but on a diligent Search, many more may be found; and in some Subjects some of these may be wanting, especially those in whom divers Branches pass the Upper-part of the Skull near the Longitudinal Suture; of which, we commonly find Two Remarkable Ones towards the *Occiput*, as has been taken Notice of, *Tab.* 90. *Fig.* 2.

L, The Great *Foramen* of the *Os Occipitis*, by which the *Medulla Oblongata* passes to the *Spina* in the *Vertebræ*.

m m, Some Veins of the *Dura Mater* which Communicate with the Inferior Short *Sinus's*.

n, Part of the *Os Jugale*.

o o, The *Os Ethmoides* or *Cribriforme*, by which the Olfactory Nerves pass out of the *Cranium*.

P P, The Optick Nerves cut off at their Egress.

q q, The Great Branches of the Carotide Arteries cut off at their Entrance into the Cavity of the Skull.

r, One of the Nerves of the Third Pair on the Left Side, made bare from the Duplicature of the *Dura Mater*, in which it passes before it Marches out of the Skull with the following Pair.

s s, The Fourth Pair of Nerves Free'd from the Duplicature last mention'd, and Turn' up at their passing the Second Perforation of the *Os Sphenoides* or Large *Rima*, Express'd *Tab.* 89. *Fig.* 2. between C, D, I.

t t, The Fifth Pair of Nerves on the Right Side Expanded, before it is Divided into Three Branches, on the contrary Side its Trunk is Whole. *Vid. Fig.* 27.

V, The Upper and Foremost Branch of the Fifth Pair of Nerves on the Left Side, before it passes out of the Skull at the Second Perforation of the *Os Sphenoides*, with the Third, Fourth, and Sixth Pair of Nerves.

w, The Nerve of the Sixth Pair on the Left Side Free'd from the Duplicature of the *Dura Mater*; in which it is Inclos'd at a considerable Distance before it Accompanies the Third, Fourth, and Foremost Branch of the Fifth Pair of Nerves at its Egress.

x, The Intercostal Nerve of the Left Side, Compos'd of Two Branches from the Fifth Nerve, and joining with the Body of the Sixth in this Subject, whether this Disposition is Constant, I must confess my late Enquiries have not afforded me an Opportunity of Observing.

y, The Two Branches of the Fifth Pair of Nerves which Help to Compose the Intercostal Nerve.

z z, The Contorsion of the Carotide Artery Collateral to the *Sella Turcica*.

1, 1, The *Glandula Pituitaria* lying in the *Sella Turcica*.

2, 2, The Circular *Sinus* or Vein Environing the Pituitary Gland, and was First taken Notice of by Dr. *Ridley*.

3, The *Infundibulum* in whose Inside, I conceive, the Trunks of Exporting Lymphducts pass from the Pinial Gland; besides which, the Inmost Cavity of the *Infundibulum* it self Transmits the Aqueous Humour of the Ventricles of the Brain into the Pituitary Gland, where it joins with the *Lympha* above mention'd.

4, 4, Two Arteries taken Notice of by *Vieussens*, which pass out of the *Cranium* to the Glandulous Membranes of the *Foramina Narium* and Neighbouring Parts.

5, 5, The Bended Parts of the Lateral *Sinus's* as they pass that Part of the *Cranium*, where the *Os Temporum*, *Sincipitis*, and *Occipitis* meet.

6, Part of the *Dura Mater* Rais'd and Reclin'd Laterally, to shew the Progress of the Third, Fourth, Fifth, and Sixth Pair of Nerves.

7, 7, The Hard and Soft Trunks of the Auditory Nerves Entring the *Os Petrosum*.

8, 8, The Eighth Pair of Nerves or *Par Vagum*, together with the Accessory Nerves († †) Accompanying them at their Egress.

† †, The Accessory Nerves.

9, 9, The Ninth Pair of Nerves.

Fig. 27.

The Trunk and Three Branches at One of the Nerves of the Fifth Pair within the *Cranium*.

A, The Trunk,

B, Its *Gangleon*,

C, Its Foremost Branch Express'd at V, in the preceding Figure, passing out of the Skull at the Second Perforation of the *Os Sphenoides*;

D, Its Middle Branch somewhat less than the other Two, which passes out at a Distinct *Foramen* of the *Os Sphenoides*, Collateral to the *Sella Turcica*, and is Reckon'd the Third *Foramen* of that Bone, Express'd *Tab.* 89. *Fig.* 2.

E, The Third Branch of this Nerve, which passes the Sixth Perforation of the *Sphenoides*.

Fig. 28.

The *Basis* of the Brain with the Large Trunks of its Blood-Vessels of both Kinds Injected with Wax, some of their Ramifications being clear'd of the *Pia Mater*, together with the Ten Pair of Nerves of the Brain, and a Portion of the *Medulla Spinalis*, &c.

A A, The Foremost,

B B, The Hindmost Lobes of the Brain.

C C, The *Cerebellum* which in this Subject was very Large.

D D, The Two Lateral *Sinus's* cut off after their Declive and Tortuous Progress, Express'd in the First of the Two precedent Figures C C, 5, 5.

E E, The Trunks of the Vertebral Arteries as they pass the Transverse Processes of the First *Vertebra* of the Neck, in their Tortuous Progress thro' the Great *Foramen* of the *Os Occipitis*, to the *Medulla Oblongata* and Brain. *Vid. Append. Fig.* 8. K K.

F, The Vertebral *Sinus* or Large Vein, in whose External Membrane the Wax is Extravast, which makes it Appear with an Unequal Surface, as here Express'd.

G G G G G, A Continuation of the *Dura Mater* Divided according to its Length; One Side lying on the *Medulla Spinalis*, the other being Rais'd and Pinn'd out.

a, A *Foramen* to whose Margin the Upper Broad Part of the *Infundibulum* is Fasten'd, and Opens into it, insomuch that if you take out the Brain with the *Infundibulum* remaining to it, and Insert a Blow-Pipe into the Fourth Ventricle, you may thereby not only Distend that and the Two Lateral Ventricles with Wind, but you will also see the *Infundibulum* Rise and be Distended also.

b b, Two White Protuberances behind the *Infundibulum*.

C C, Two Large Branches of the Carotide Arteries cut off, before they pass between the Foremost and Hinder Lobes of the Brain.

d d, Two Communicant Branches between the Carotide and Cervical Arteries, by which the Latter chiefly became fill'd with Wax, it being Injected into One of the Trunks of the Carotide Arteries only of One Side: Hence we may be Inform'd, not only of the Inosculations of the Large Branches of the Carotide Artery of the Right Side with those of the Left, but of their Communications also with the Vertebral Arteries, as they pass the Transverse Processes of the *Vertebræ*; the Wax in such an Injection pouring out by the Vertebrals; as I have had occasion more than once to Observe by Injecting these Arteries as above mention'd, after the Head together with the *Vertebræ* of the Neck have been taken from the Body.

e e e e, Two Large Branches of the Cervical Artery sometimes seeming as tho' they came from the Communicant Branches; from the Foremost of these chiefly Spring the Arteries of the *Plexus Choroides*; from the Two Hindmost Arise those Branches which go to the Choroeid *Plexus* of the Fourth Ventricle of the Brain.

f, Two Little Branches of the Carotides.

h h, The Two Trunks of the Vertebral Arteries which Compose the Cervical.

g, The Cervical Artery.

i i, The Spinal Artery which by reason of the Retrograde Motion of the Wax, or some Coagulated Blood in it near the Vertebral Artery, was not fill'd with Wax as the rest.

k, A Small Branch of an Artery Running between the *Fasciculs* of the Nerve of the Ninth Pair, on the Right Side near their Originals.

l l, Parts of the *Crura Medulla Oblongata*, immediately before they meet at their Conjunction under the *Pons Varolii*.

m m, The Annular Protuberance or *Pons Varolii*.

n, That Part of the *Caudex Medullaris* or *Medulla Oblongata* on the Right Side, call'd by *Willis* and *Vieussens*, *Corpora Pyramidalia*,

o, That Part on the same Side, call'd *Corpus Olivare*.

P, A Branch of the Carotide Arteries which Divide the Two Anterior Lobes of the Brain from each other; from whence Spring some Small Branches which Accompany the Olfactory Nerves at their Egress by the *Os Cribriforme*, Fig. 26. 4, 4.

q q, Little Branches from the Cervical Arteries which Run under the *Pia Mater* that Covers this Part, and sometimes pass further to the *Plexus Choroides* in the Fourth Ventricle, and *Cerebellum*.

r r r r, Other Branches passing into the Annular Protuberance.

s s, The Two First Medullary Processes of the *Cerebellum* which are continued to the *Protuberantia Annularis*, and seem to Compose Part of it: The Two Second Processes of the Cerebel are Express'd *Tab.* 10. *Fig.* 1. S S.

t t, The Veins on the *Cerebellum* which pass according to its *Sulci* or External Furrows which Vary very much in their Progress from those of the Brain it self.

v v v, Other Veins Variously Distributed on the Cerebel which Empty themselves into the Lateral *Sinus's*.

w w, The *Sulci* of the Brain, in which large Branches of Veins and sometimes Arteries may be seen.

x x x, Their Capillary Branches as they Appear under the *Pia Mater* on the External Cortical Surface of the Brain.

1, 2, 3, 4, 5, &c. The Ten Pair of Nerves of the Brain, with Seven of those of the Spinal Marrow.

1, 1, The First Pair of Nerves of the Brain, call'd *Par Olfactorium*, they are much Larger in Brutes, and are Hollow; which Hollownesses Communicate with the Ventricles of their Brains, but do not Appear so in Humane Bodies. They are call'd *Processus Mamillares*, from their Appearance in Quadrupedes. By the utmost Scrutiny that Exact Anatomizer of these Parts, Dr. *Ridley* and my Self could make, we never Discover'd but One Original to each of these Nerves; which is from the Under and Foremost Part of the *Crura Medulla Oblongata*, whence they pass in an Oblique Manner for some Space between the Fore and Hindmost Lobes of the Brain, and March out from thence as Appears in the Figure: As they pass thro' the *Os Ethmoides* (o o, *Fig.* 26.) these Medullary Bodies are Converted into as many Nervous *Fasciculs*, as there are Perforations in that Bone, which are afterwards Expanded on the Glandulous Membrane that Invests the *Foramina Narium*.

2, 2, The Second Pair of Nerves, call'd *Optici*, or Seeing Nerves: These Arise from the Two Large Medullary Protuberances of the Brain, call'd *Thalami Nervorum Opticorum*, Express'd in the following Table, c c, *Fig.* 30. and passing over the *Crura Medulla Oblongata*, March to their Conjunction here Express'd †; after parting from each other again, they soon pass the First *Foramina* of the *Os Sphenoides* P P, *App. Fig.* 26. where the Great Branches of the Carotide Arteries lie Contiguous to them; whence it happens in any great *Plethora* (as after plentiful Drinking or the like) these Arteries by reason of their Turgescence, so Press on the Optick Nerves, as to Distort the Course of their Fibres, and make Objects seem Disorder'd. Some Branches of the Blood-Vessels are Visible to the Naked Eye as they pass thro' the Bodies of those Nerves, and are Conspicuous also on their Expansions within the Bulb of the Eyes, which Compose the *Tunica Retina*.

3, 3, The Third Pair of Nerves passing out between the Two Branches of the Cervical Artery e e e e; these Arise from the Upper and Fore-part of the Annular Process, where the *Crura Medulla Oblongata* meet: Nor do the Beginnings of these Nerves Appear till the Blood-Vessels above mention'd and *Pia Mater* are remov'd: They Enter the Duplicature of the *Dura Mater* on each Side the Pituitary Gland, as Express'd *Tab.* 9. *Fig.* 3. H H, and pass out of the Skull with the following Nerves, to the Muscles of the Eyes, wherefore these are call'd *Par Oculorum Motorium*.

4, 4, The Fourth Pair of Nerves of the Brain as they Appear after their Progress between the *Cerebrum* and *Cerebellum*: They Arise Remote from their Appearance in this Figure, even at the Back-Side of the *Medulla Oblongata*, *Tab.* 10. *Fig.* 1. v v. In taking out the Brain you'll find them under the Fore-part of the Second Process of the *Dura Mater* near the *Sella Turcica*: They March into the Duplicature of the *Dura Mater* immediately under the Former, and pass the Second *Foramen* of the *Os Sphenoides* with them into the *Orbita Oculi*: They are call'd *Par Patheticum*, either because some Branches of them pass to the Oblique Muscles of the Eye, or that considerable Branches (if not their Whole Trunks) pass the *Trochlea* Cartilages of the Eyes.

5, 5, The Fifth Pair are very Large in their Originals, at the Upper and Lateral Part of the *Processus Annularis*, near the *Pedunculus* or Second Process of the *Cerebellum*. In taking out the Brain from the *Basis* of the Skull, you'll find these Nerves immediately under the Pathetick: Nor can you well see them to cut them off (in this Operation) unless you First Divide the Second Process of the *Dura Mater*, where it's Fasten'd to the Extremity of the Inner Process of the *Os Petrosum*: After they pass over the Extremity of the last mention'd Process they Frame Gangleons, and each is Divided into Three Branches Represented in the preceding Figure.

6, 6. The Sixth Pair of Nerves are about the Bigness of the Third, and Arise from the Hinder-part of the Annular Process, not far from the *Basis* of the *Corpora Pyramidalia*; as they pass on the Annular Protuberance, some Branches of the Cervical Artery run over them: They Enter the Duplicature of the *Dura Mater* below the Former. *Vid. Tab.* 9. *Fig.* 3. N N, and pass over the Extremity of the Internal Process of the *Petrosum* with the Former, as is Represented *Fig.* 26. w.

7, 7, The Seventh Pair are the the Auditory or Hearing Nerves, each of which are Compos'd of Two Nerves; the One being Hard, the other Soft, which have Distinct Originals: The Former or Hard Trunk Springing from the *Medulla Oblongata*; the Latter or Softer Arising very Remote from it, being continu'd from divers Bright Medullary Fibres that Appear in the Fourth Ventricle of the Brain, whence they Creep on the Sides of the *Caudex Medullaris*, till they meet with the Harder Trunk, which they Accompany; to the *Ossa Petrosa*, Fig. 26. 7, 7. The Soft Nerves being Expanded within the Labyrinths and Cochleas of the Organs of Hearing; whilst the Hard Trunks pass thro' the Bone, and Expand themselves in a Larger Field, as the Accurate *Vieussens* Represents them.

8, 8, The Eighth Pair of Nerves or *Par Vagum*; each of these have Ten or Twelve Nervous *Fibrillæ* Springing from the *Medulla Oblongata*, immediately below the Annular Process m, m, and under the *Corpora Olivaria* o o, or between them and the Third or Cordal Processes of the *Cerebellum*, *Tab.* 10. *Fig.* 1. W W, whence they March Accompanied with divers Small Blood-Vessels of both Kinds, to their Egress with the Lateral *Sinus's* 8, 8, *Fig.* 26. where they meet with the Spinal Accessory Nerves ** which go out with them, and are Distributed as *Vieussens* has Express'd them.

9, 9, The Ninth Pair of Nerves, whose Various Originals of the Right Side differ from those of the Left: They continue to derive their Beginnings at Various Distances from the Upper-parts of the *Corpora Olivaria*, to Half an Inch in Length on the *Caudex Medullaris*; some of the Fibres of that on the Left Side, passing over the Vertebral Artery of the same Side, when those of the contrary Side pass from under it: After passing a short Space, these Nervous Fibres Collectively pass the Third Perforation of the *Os Occipitis*. *Vid. Fig.* 26. 9, 9. *Tab.* 9. *Fig.* 3. R R. *Tab.* 90. *Fig.* 3. E.

k, A Small Branch of the Vertebral Artery which I have seen Injected with Wax, and pass out with One of these Nerves.

** The Spinal Accessory Nerves as they Ascend from under the Vertebral Arteries to the *Par Vagum*: They Arise much Lower from the *Medulla Spinalis* than *Vieussens* describes them, even from the Foremost and Hindmost Beginnings of the Seventh Pair of Nerves of the Neck (16) and in their Collateral Ascent to the Spinal Marrow, they still receive New Roots from all the Nervous Origins they pass by, except those of the Ninth Pair of the Brain.

10, The Tenth Pair of Nerves of the Brain on One Side, or more properly the First of the Neck, which pass out between the First *Vertebra* of the Neck and the *Os Occipitis*.

11, 12, 13, 14, 15, 16, 17, The rest of the Nerves of the Neck, which pass out between the *Vertebræ* successively.

Fig. 29.

A A, Part of the *Cerebellum*;

a a, Its Second Processes which Help to Compose the Annular Protuberance.

B B, The *Crura Medulla Oblongata* cut off from the Brain.

C C, The Annular Process Divided thro' its Middle, its External Surface (m m, in the preceding Figure) being cut off with a Razor, or large sharp Knife.

b b, The Cineritious and Medullary *Striæ* which Appear in this Section of the Annular Protuberance.

c, The Middle Medullary Tract to which the Lateral *Striæ* run.

d d, The Cineritious Part of the *Medulla Oblongata* under the *Corpora Pyramidalia*: In this Section the *Corpora Olivaria* are Divided.

e, The Left Chordal Process partly *in Situ*.

APPEN-

Fig: 26.

Fig: 27.

Fig: 28.

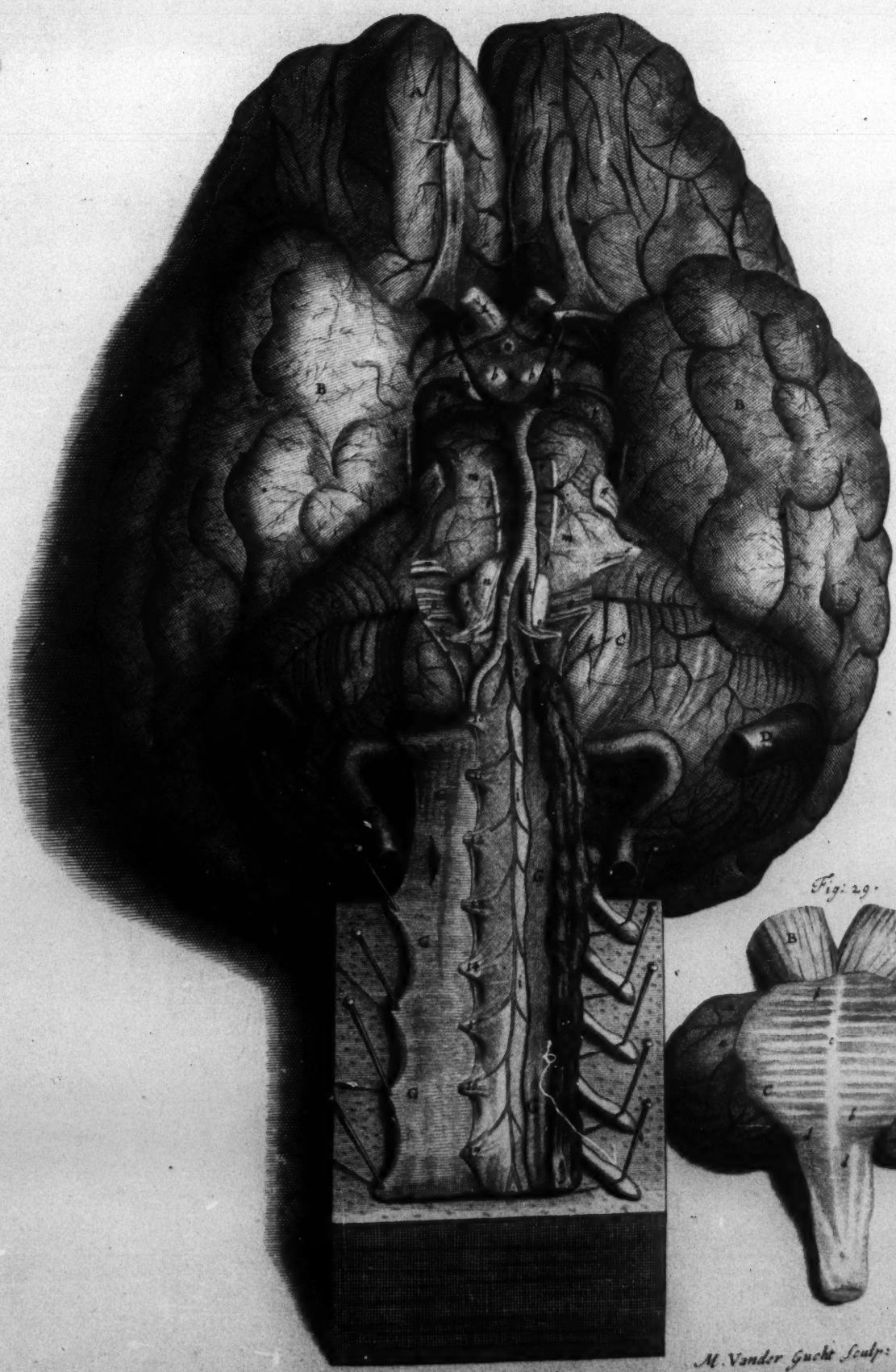
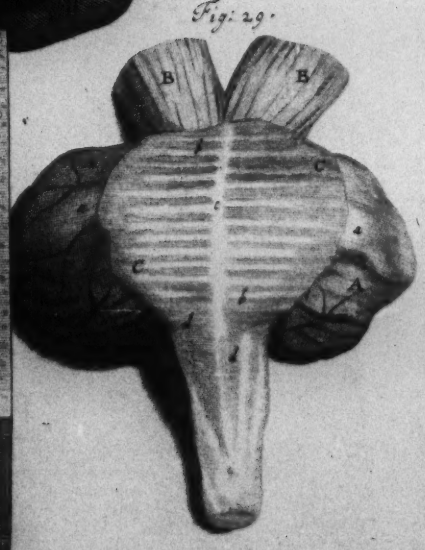


Fig: 29.



M. Vander Gucht Sculp:

App: Tab: 7.

Fig: 30.

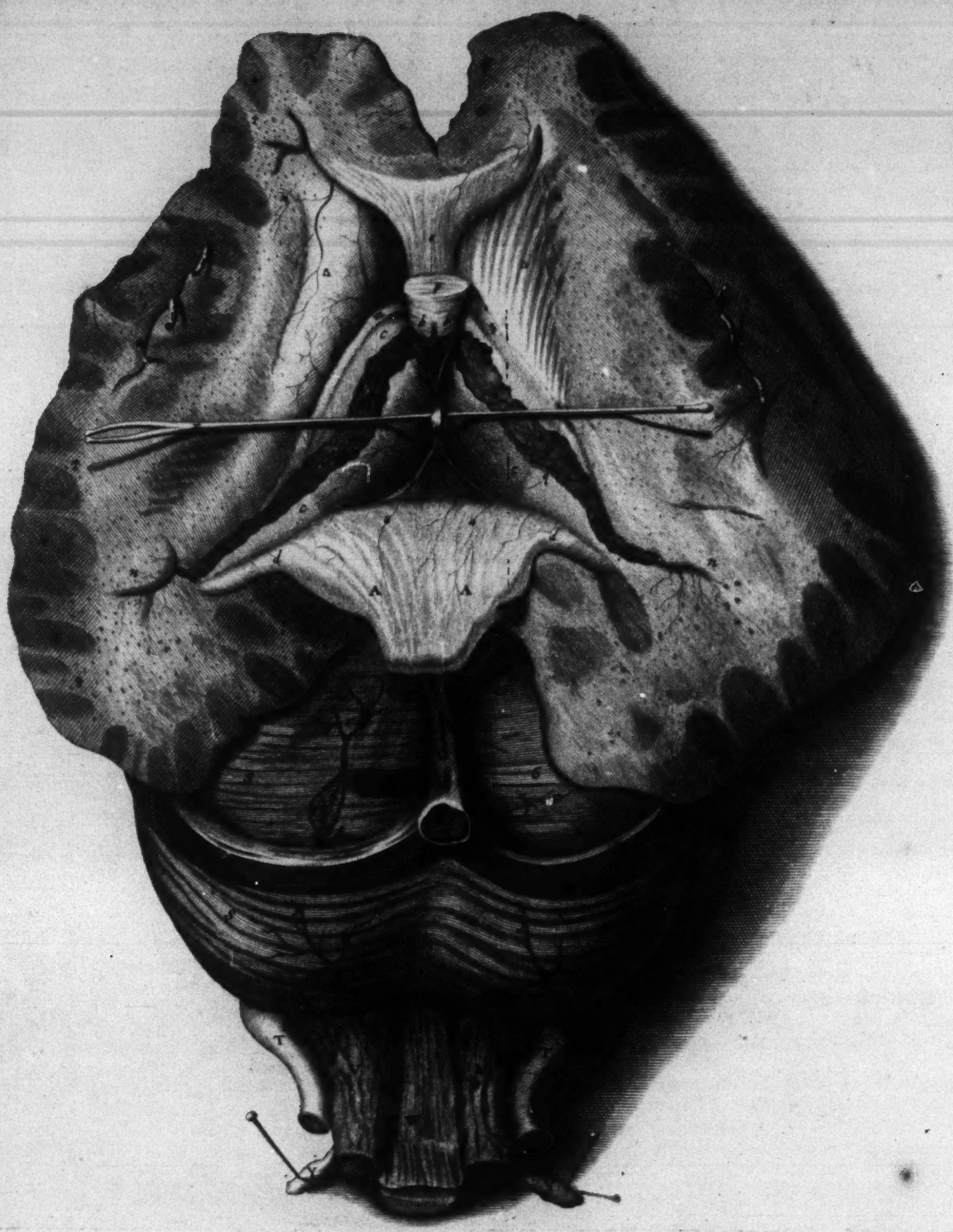


Fig: 32.

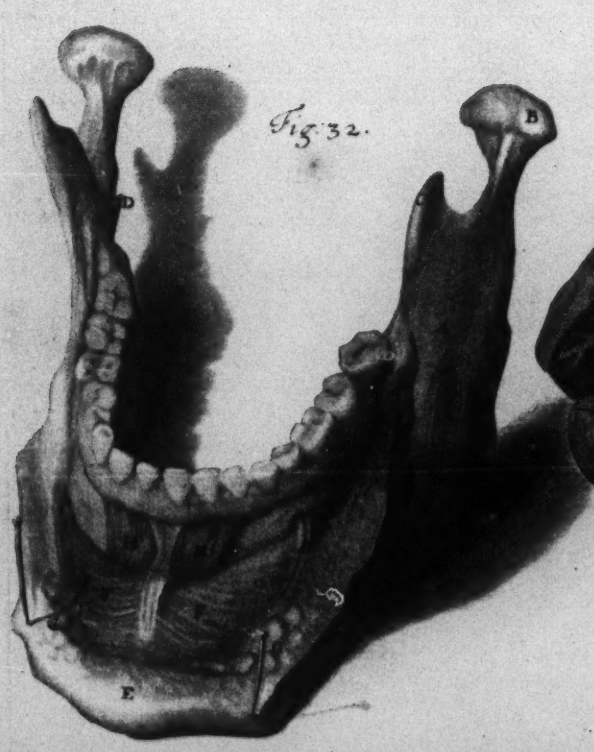
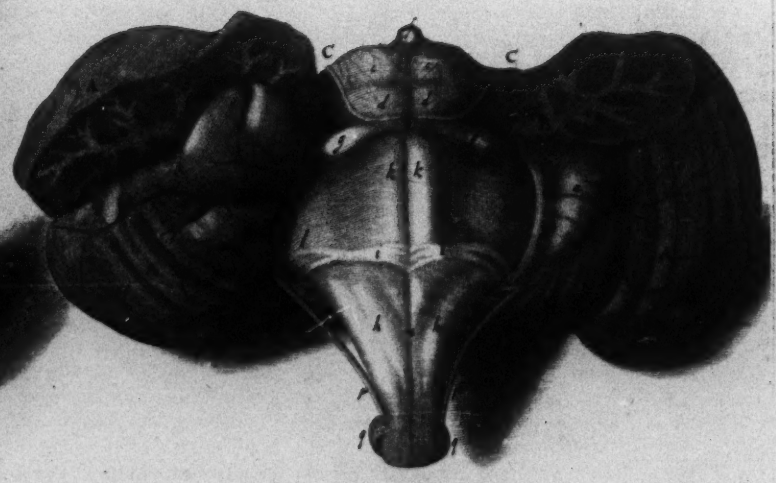


Fig: 31.



M: Vander Gucht Scul:

APPENDIX.

THE SEVENTH TABLE.

Fig. 30.

THE Brain lying on its *Basis* after its Two Hemiſpheres are cut off, and the Blood-Veſſels Injected with Wax; the *Cerebellum* remaining intire.

A A, The Inferior Part of the *Fornix* as it Appears when cut from its Roots b, b. and turn'd Back, with Part of the *Corpus Calloſum* remaining on it.

a a, The Blood-Veſſels that Appear on this Inferior Surface of the *Fornix*.

b b, The Roots of the *Fornix*.

c c, The *Thalami Nervorum Opticorum* or Beginnings of the Optick Nerves.

Δ Δ, The *Corpora Striata*; that of the Left Side remaining Whole; the Right being Divided to ſhew its *Striæ*.

d d, The *Crura Fornicis* where they begin to Wind down on the Sides of the *Crura Medullæ Oblongatæ*: Theſe *Crura* of the *Fornix* are call'd *Hyppocampi* or *Bombycini*.

e e, The *Plexus Choroides* whoſe Arteries Ariſe from the Firſt Branches of the Cervical Artery e e, *Appen. Fig.* 28.

f, The Meeting of the *Plexus* at the Root of the *Fornix*, where its Two Veins paſs to its other Part g g.

g g, The other Part of the *Plexus Choroeides*, whoſe Arteries Spring from the Second Branches of the Cervical Artery, join'd with the Firſt by Communicant Branches; which do not Appear here, by reaſon they lie under the *Crura Fornicis* d d.

h h, Two Veins which Ariſe from the Upper-parts of the *Plexus Choroeides*, and paſs the Third Ventricle to the other Part of the ſame *Plexus* g g, near the *Nates* and *Teſtes*.

i i i i i i, The Branches of the Carotide Arteries cut off, as they Appear Injected with Wax, and paſſing between the Cortical Foldings of the Brain.

k, A Branch of a Vein which paſſes according to the Length of the *Corpus Striatum* of the Left Side, and Diſcharges its Blood into the Veins of the *Plexus Choroeides*; that of the Right Side being taken away to ſhew the *Striæ*.

l, Part of the *Rima* of the Third Ventricle that do's ſomewhat Appear under the Vein, h.

m, A long Medullary Tract between the *Corpus Striatum* and *Thalamus Nervi Optici*, call'd by Dr. *Willis*, *Proceſſus Medullaris Tranſverſus*.

n n n n, The *Centrum Ovale* of *Vieuſſens*.

o, That Part of the *Corpus Calloſum* by *Vieuſſens*, call'd *Fornix Vera*, between which, and the *Fornix* p, is plac'd the *Septum Lucidum*, Dividing the Fore-part of the Right Ventricle of the Brain from the Left. This *Septum* by ſome call'd *Speculum*, is a Continuation of the Inward Membrane which Inveſts the Two Superior Ventricles, meeting in their Upper-parts not unlike the *Pleura* on the *Sternum*, where it Compoſes the *Mediaſtinum*, and Divides the Cavity of the *Thorax*. In the Upper-part of this *Septum* I have more than once ſeen its Duplicature fill'd with a Watriſh Humour in Hydropick Brains, as *Vieuſſens* alſo takes Notice.

O, The Fourth *Sinus* of the *Dura Mater* fill'd with Wax.

P, The Longitudinal *Sinus* cut off, where it meets the Fourth and Two Lateral *Sinus's*, call'd *Torcular Herophili*.

Q Q, The Two Lateral *Sinus's* alſo Extended with Wax.

R, A Vein fill'd with Wax on the Second Proceſs of the *Dura Mater*.

r, Some Branches of Veins as they Appear on the Second Proceſs of the *Dura Mater*.

p, The *Fornix* cut off near its Two Roots.

q q, Some Lymphe-ducts on the *Plexus Choroeides* which Accompany the Vein h h h, in their Way to the *Glandula Pinialis* not ſeen in this Figure; that Gland being plac'd under the *Fornix* A, a, with the *Nates* and *Teſtes*, as is Expreſt *Tab.* 10. *Fig.* 1. Q, O, O, P, P.

Theſe Lymphe-ducts perhaps were ſeen by that Accurate Anatomiſt Monſ. *Beddevold*, in Examining an Ox's Brain; of which he Communicated an Account to the Accurate *Nuck*, as Monſ. *Beddevold* himſelf told me, and Appears in an Epiſtle at the End of *Nuck's Adenographia Curioſa*. *Vidi*, ſays he, *Lymphaticum in Cerebro Bivino, quod examine tuo (ut Originem ſcias & Inſertionem) erit Digniſſimum. Non longe à Glandula Pineali, à qua Ramos forte habet, incumbit Plexui Choroidæo ad Infundibuli latera ſeſe extendens.*

S S S S, The *Cerebellum* Cover'd with the Second Proceſs of the *Dura Mater* in its Upper-part, and the *Dura Mater* it ſelf on the Hinder-part.

ſ ſ, Some Branches of Veins which Appear fill'd with Blood on the *Dura Mater*, Covering the Back-part of the *Cerebellum*; which vary in their Courſe from thoſe Subjacent Veſſels on the *Pia Mater*, which are immediately Diſtributed on the *Cerebellum* it ſelf, and faintly Appear in thoſe Stroaks running ſomewhat Parallel with the Lateral *Sinus's*.

T T, Parts of the Vertebral Arteries.

V V, The Vertebral *Sinus's* on which the Wax Appears Extravaſt, as in *Fig.* 28. F.

W, The Back-part of the *Medulla Oblongata* Cover'd with the *Dura Mater*.

x x, A Probe Supporting the large Veins of the *Plexus Choroides* in the Third Ventricle of the Brain.

† † † The Medullary;

* * * The Cineritious Part of the Brain.

Fig. 31.

The Back-part of the *Cerebellum* cut thro' its Hinder-part and Reclin'd Laterally; together with a Portion of the *Medulla Spinalis*.

A A A, The *Cerebellum* Cover'd with the *Pia Mater* only, where its Circular *Sulci* in which its Large Blood-Veſſels paſs, are Expreſt, together with divers Arborious Ramifications of Blood-Veſſels, which Decuſſate thoſe of its *Sulci* as they March under the *Pia Mater*.

B B, The Branching of the Medullary Part of the *Cerebellum*, as it Appears when Divided.

a, The Vermicular Proceſs on the Back-part of the *Cerebellum*.

C C, The Two Pathetick Nerves near their Origin.

c c, The *Nates*;

d d, The *Teſtes*, in whoſe Surfaces the Blood-Veſſels Appear Diſtributed under the *Pia Mater*.

f, The *Glaudula Pinialis* which we take to be a Lymphatick Gland, Receiving *Lympha* from the Lymphe-ducts of the *Plexus Choroeides*, and Diſcharges it into Exporting Lymphe-ducts which paſs the Third Ventricle of the Brain, to the *Infundibulum* and *Glandula Pituitaria*; the Manner we Conceive theſe Lymphe-ducts paſs the *Infundibulum*, is on its Internal Surface, and ſo pierce the Pituitary Gland; it being unuſual in the Practice of Nature for Lymphe-ducts before they Arrive at the *Receptaculum Chyli* to Diſcharge their Contents in large Ciſterns, to be again tranſmitted by narrow Conduits to the Thoracick-duct, as it muſt do, if as ſome Conceive, the *Infundibulum* it ſelf is a meer Lymphe-duct, which in ſome meaſure I am apt to think with Dr. *Ridley* it do's; as I have already intimated, *Append. Fig.* 26. 3.

g g, The Firſt Proceſs's of the *Cerebellum* which paſs towards the *Nates*.

e, The Tranſverſe Proceſs which Unite the Two Firſt Proceſſes of the *Cerebellum*, whence the Pathetick Nerves take their Riſe.

h h, The Third, or Cordal Proceſs's Ariſing from the *Cerebellum*, and Deſcend on both Sides the *Medulla Oblongata*.

i i, Some Bright *Striæ* which Appear in the Fourth Ventricle of the Brain, and Help to Compoſe the Medullary Trunks of the Auditory Nerves; theſe ſometimes have Various Originals from the Upper-part of the Fourth Ventricle; at other Times ſome of theſe *Striæ* Ariſe Lower than here Expreſt.

k k, l l, n, The Fourth Ventricle Open'd and Expanded.

o, The Beginning of the *Medulla Spinalis*.

p p, The Acceſſary Nerves.

q q, Thoſe Parts of the Tenth Pair of Nerves which Ariſe from the Back-part of the *Medulla Spinalis*.

m m, Parts of the Eighth Pair of Nerves where they meet the Acceſſary Nerves.

Fig. 32.

The Lower Jaw with ſome of the Muſcles of the Under Lip remaining to it.

A, The External Left Side of the Bone made bare.

B, The *Proceſſus Condyliformis*.

C, The *Proceſſus Corone*.

D, An Acute Proceſs, on the Internal Part of the Lower Jaw beyond the *Dentes Mollares*, under which the Trunks of Nerves and Blood-Veſſels paſs into the *Meditullium* of the Bone, and give Branches to each Tooth.

d, Some Branches of the ſame Nerves and Blood-Veſſels Marching out of the Bone again to the Muſcles, Glands, and Membranes of the Lower Lip.

E, The Inſide of the Lower Lip Cover'd with its Proper Membrane.

F F, The Inner Face of the *Muſculus Depreſſor Labii Inferioris Proprius*. *Vid. Tab.* 12. *Fig.* 5. H.

G G, Some of the Small Salival Glandules which Appear immediately under the Membrane E.

H H, Theſe Muſcles I could never find Deſcrib'd by any Author, tho' they are conſtant in Nature, or at leaſt in all thoſe Bodies I have ever look'd for them. I call them *Elevatores Labii Inferioris Proprii* from their Office. They Spring Fleſhy from the Fore-part of the Lower Jaw, immediately under the *Gengivæ* of the *Dentes Inciſores*, and Deſcend to their Inſertions in the Skin, which Compoſes the Chin: When they Act, they Draw up the Skin on the Chin, and make it Appear Variouſly Indented,

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EIGHTH TABLE.

Fig. 33.

THE Muſcles of the Face as they Appear after the Skin, Fat, Membranes, and *Muſculi Quadrati Genarum* are taken off.

A A, The *Muſculi Frontales.*
B, The *Orbiculares Palpebrarum.*
C, The *Muſculus Dilatator Alæ Naſi.*
D, The *Elevator Labiorum Communis.*
E E, The *Elevator Labii Superioris Proprius.*
F F, The *Sphincter Labiorum.*
G G, The *Zygomatici ſeu Diſtortores Oris.*
H H, The *Depreſſor Labiorum Communis.*
I, The *Depreſſor Labii Inferioris Proprius.*
K, The *Buccinator.*
L, The *Temporalis.*
M, The *Elevator Auriculæ.*
N, The *Maſſeter.*
a, Part of the *Os Jugale.*
b, The Cartilage of the *Auricula* free'd from the Skin.
c c, The Parotide Gland.
d, The *Ductus Salivalis Superior* of the Parotide Gland, as it Deſcends over the *Maſſeter* thro' the *Buccinator* into the Mouth.
e e, A Branch of the Carotide Artery which paſſes thro' the Inferior Maxillary Gland.
f, Part of the Lower Jaw Bone made Bare.
g, Part of the Inferior Maxillary Gland.
O, Part of the *Muſculus Biventer in Situ.*
P, The *Maſtoideus.*
Q, Part of the *Cucularis.*
R, Part of the *Elevator Scapulæ.*
S S, Parts of the *Muſculi Sternohyoidei.*
T T, Parts of the *Coracohyoidei.*

Fig. 34.

The Left Eye with its Muſcles free'd from the Orbit and Dry'd.

A. The Bulb of the Eye Fill'd with Wax.

a a, The Optick Nerve in like manner Diſtended with Wax.

B, A Portion of the Superior and External Margin of the Bone of the Orbit next the Noſe.

b..., A ſmall Cartilage call'd the *Trochlea*, in which the Long Tendon of the Superior Oblique Muſcle (D) paſſes to its Inſertion.

C, A Portion of the Inferior and External Margin of the Orbit, where the *Muſculus Obliquus Inferior* (I) takes its Origin.

D, The *Obliquus Superior* as it Ariſes from the Inferior Part of the Orbit, and paſſes thro' the *Trochlea* b... to its Inſertion on the Back-part of the Bulb of the Eye. This Contortion of the Tendon of this Muſcle renders it capable of drawing the whole Bulb of the Eye Outwards, and turning its *Papilla* Downwards.

E, The *Muſculus Attollens.*
F, The *Abducens.*
G, The *Deprimens.*
H, The *Adducens.*
I, The *Obliquus Inferior*, whoſe Origin from the External Margin of the Inferior Part of the Orbit, renders it capable of performing the ſame Action in Oppoſition to the *Trochlearis* or *Obliquus Superior*, *i. e.* of drawing the Poſterior and Lateral Part of the Bulb of the Eye towards its Origin, whereby the whole Eye is drawn Outwards, and its *Pupilla* turn'd Upwards; elſe the Projection of the Eyebrows would hinder our looking Upwards, unleſs the Head at the ſame Time was drawn very much Back.

Beſides theſe Proper Offices of the Two Oblique Muſcles of the Eyes, they have conjunctly a very uſefull common Office in holding the Bulb of the Eye as it were on an *Axis*, they prevent its being drawn Inwards, when any of the Streight Muſcles Act; by which means, each performs its proper Office in turning the Eye either Upwards, Downwards or Sideways; which is no Inconſiderable Artifice in Nature.

Fig. 35.

Repreſents the Inferior Part of the Skull with its *Baſis* uppermoſt; the Left Side of the Lower Jaw together with the Firſt *Vertebra* of the Neck and its Muſcles Ariſing from it, remaining to the *Occiput.*

A, The Left Side of the Lower Jaw.
B, The *Muſculus Pterygoideus Internus, in Situ.*
C, The *Foramen* of the Fourth Bone of the Upper Jaw, by which a Large Branch of the Fifth Pair of Nerves paſſes to the Muſcles of the Face, and a Branch of the Carotide Artery to the Inner Cavities of theſe Bones, as you ſee them Expreſt in the preceding Figure.
D, The *Muſculus Depreſſor Labii Superioris Proprius & Conſtrictor Alæ Naſi*, here cut from its Inſertion to the Upper Lip, and left at its Origin from the Gums of the Upper Jaw.
d, Part of the *Elevator Labii Inferoris Proprius* left to its Origin from the Lower Jaw.
e, That Part of the Inferior Margin of the Orbit, where the Inferior Oblique Muſcle of the Eye Springs, Expreſt in the preceding Figure at C.
E, The *Os Jugale.*
f f, The Styloidal Proceſs's of which that of the Right Side is broken off, which frequently happens by means of the Rope after the Common Execution of Malefactors.
G G, The Mammiform Proceſs's.
H, The Firſt *Vertebra* of the Neck remaining on the *Occiput.*
g g, Two Proceſs's of the Firſt *Vertebra* of the Neck, which are Articulated with the like Proceſs's of the Second.
h, The Extremity of the Tranſverſe Proceſs of the Firſt *Vertebra.*
i, The *Muſculus Annuens* or *Rectus Minor Anticus*, Expreſt ſomewhat Foreſhorten'd in *Appen. Fig.* 8.
k, The *Rectus Lateralis* or *Abnuens Lateralis.*
l, The *Obliquus Superior Capitis.*
m, The *Muſculus Rectus Minor Poſticus.*
I, The *Auricula* or Outward Ear.
n, The Lobe of the Ear cut off.
o, That Part of the Superior Orbit where the *Trochlea* is Faſten'd.
K K. The *Os Occipitis.*
L, The *Os Squamoſum.*
M, The *Os Frontis.*
N, Part of the *Os Sphenoides.*

App: Tab: 8

Fig: 33.

Fig: 35.

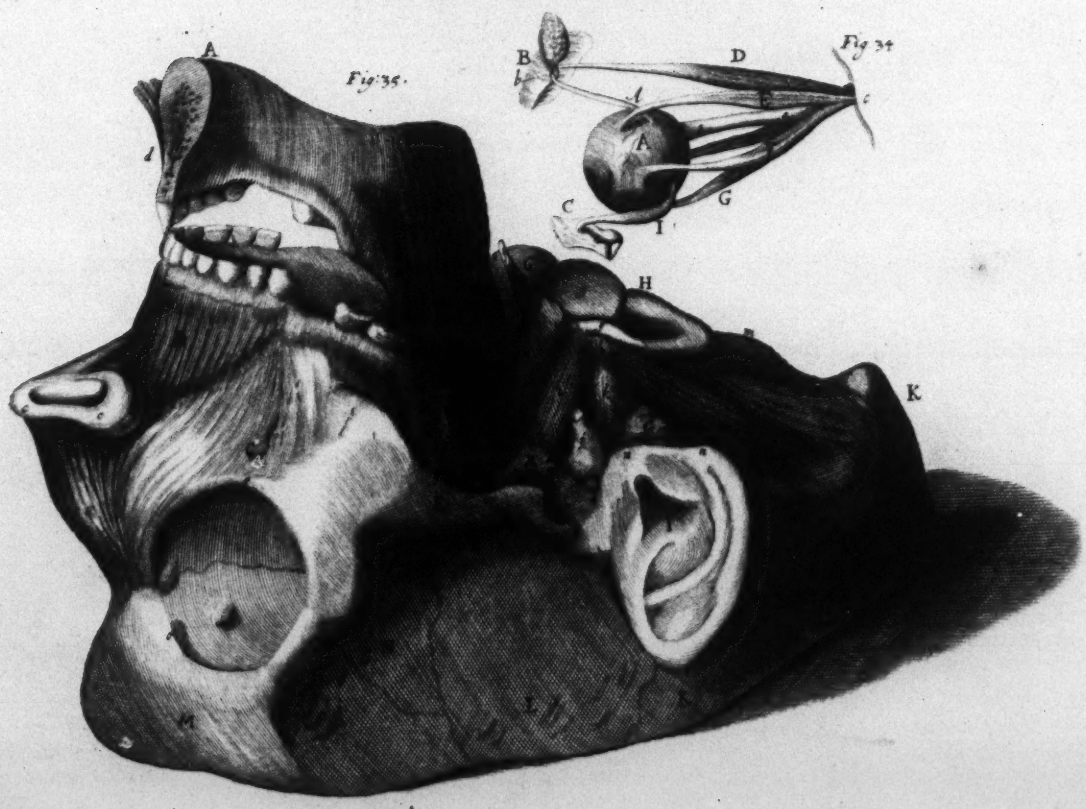
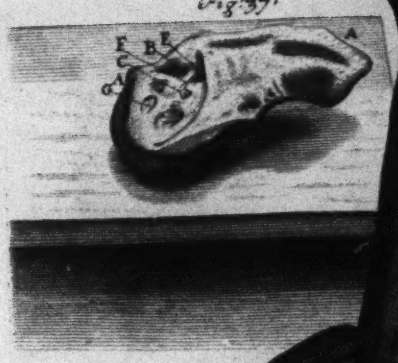


Fig 34

App. Tab. 9.

Fig: 36.

Fig: 37.



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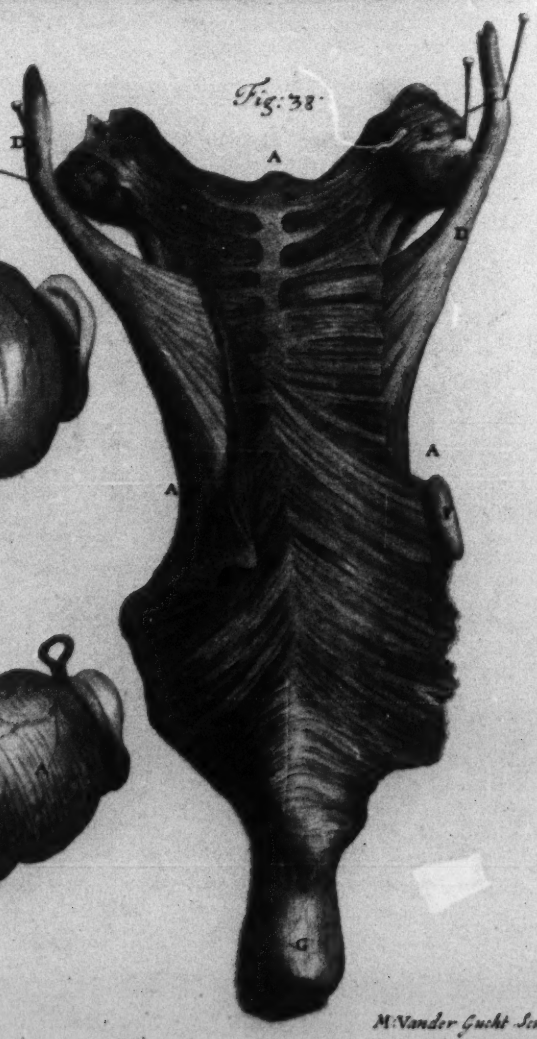

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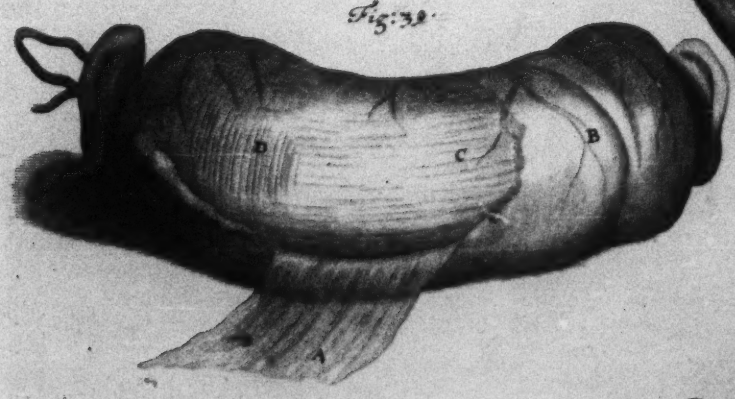

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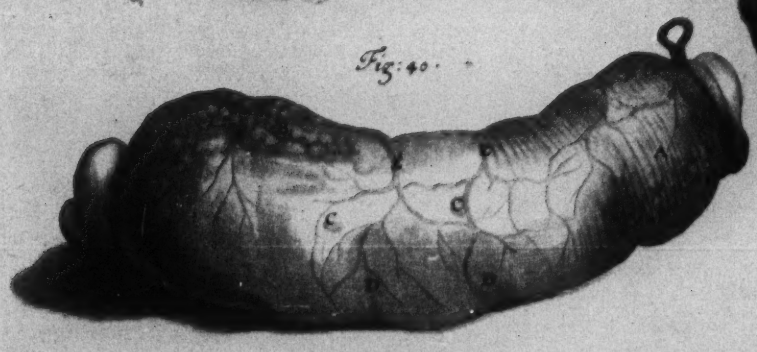

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APPENDIX.

THE NINTH TABLE.

Fig. 36.

SHEWS divers Muſcles Employ'd in the Motions of the Head and *Vertebræ* of the Neck, which Appear on the Back-part.

A, Part of the Hairy Scalp remaining on the Fore-part of the Head.

B, The *Os Occiputis*, made bare.

C, Part of the *Muſculus Splenius* left at its Inſertion.

a, Part of the *Os Jugale*.

DDD, The *Muſculus Complexus* Rais'd from its Inſertion, to ſhew its Inſide.

EE, The *Recti Majores*, that on the Right Side remaining *in Situ*, that of the Left hanging down from its Origin.

FF, The *Obliqui Superiores*, *in Situ*.

GG, The *Obliqui Inferiores*, *in Situ*.

HH, The *Recti Minores*, alſo *in Situ*.

b, The *Proceſſus Maſtoides* of the Left Side, made bare.

c, The Back-part of the Firſt *Vertebra* of the Neck, made bare.

d, Part of the *Complexus* Inſerted to the Mammiform Proceſs, by *Falloppius* made a Diſtinct Muſcle, which with its Correſponding Part on the other Side, he reckons the Third Pair of Muſcles of the Head.

IIII, The *Spinales Colli*, that of the Left Side remaining *in Situ*, the Right being Rais'd from its Inferior Part, and Turn'd to One Side, to ſhew its Subjacent Muſcle the *Tranſverſalis Colli*.

K, The *Tranſverſalis Colli* which Ariſes from the Tranſverſe Proceſſes of the Inferior *Vertebræ* of the Neck, and is Inſerted to the Spinal Proceſſes of its Superior *Vertebræ*.

LLL, The *Muſculi Interſpinales Colli*; Theſe are not taken Notice of by Authors, tho' they are Diſtinct Pair Muſcles as they are here Repreſented: It was for theſe Muſcles the Spinal Proceſſes of the *Vertebræ* of the Neck are made Double: They draw the Spinal Proceſſes nearer each other, when we pull the Head very much Back, as when we would look on the *Zenith*.

eeee, The *Apices* ot the Double Spinal Proceſſes.

f, The Extremity of the Spine of the Firſt *Vertebra* of the *Thorax*.

Fig. 37.

Repreſents Part of the Organ of Hearing of a Calf, where a Small Bone (Diſtinct from that plac'd between the Long Proceſs of the *Incus* and *Stapes*) may be ſeen in the Tendon of the *Muſculus Stapedis*. *Schelhamer* tells us of the like Bone found in ſome Animals lying in the Tendon of the Internal Muſcle of the Ear, Deſcrib'd by *Euſtachius*; but whither he has miſtaken it for the *Muſculus Stapedis*, no Opportunity has hitherto given me occaſion to Obſerve. The Knowledge of this Small Bone in the Tendon of the *Muſculus Stapedis* of a Calf, was Communicated to me by the Ingenious Dr. *Adare*; but there is no ſuch Contrivance in Humane Bodies.

AA, Part of the *Os Petroſum*.

B, The *Foramen Rotundum*.

C, The *Stapes* on the *Foramen Ovale*.

E, The *Muſculus Stapedis* lying bare in the Cavity of the *Tympanum*; it not being Incloſ'd in a Bony Channel in this Animal, as in Humane Bodies.

F, The Small Bone in the Tendon of the *Muſculus Stapedis*, which is plac'd on a Riſing of the *Os Petroſum*, on which it Acts as on a Pully, by which means it draws the *Stapes* from the *Foramen Ovale*.

G, The *Cochlea* Open'd.

Fig. 38.

The Back-parts of the Muſcles of the *Pharynx* and *Oeſophagus*.

AAA, That Part which Compoſes the *Pharynx*.

BB, The *Muſculus Pterygopharyngeus*: This is Erroneouſly Divided into Two Pair of Muſcles by Authors, as Appears by *Tab.* 34. *Fig.* 3, 4. after *Bourdon*: It has Two Thin Fleſhy Origins from the Roots of the *Proceſſus Pterygoides*, and in a Semicircular Manner Embraces the Back-part of the Glandulous Membrane of the *Fauces* as well as the *Tonſillæ*. When it Acts in Deglutition, it not only Straitens the *Fauces*, but Compreſſes the *Tonſillæ*, as well as the Leſſer Glands of the *Fauces*, and Forces out their contain'd Matter at the ſame Time, to join with the Aliment in its Deſcent to the Stomach; this Muſcle Acts in like Manner in Secretion or Hawking up any Tenacious Matter, whither Log'd in the *Fauces* or Excretory Ducts of the *Tonſillæ*. I chuſe to make this a Diſtinct Muſcle from the *Oeſophageus*, not only becauſe its Extended on that Part call'd the *Pharynx*, but it Acts Diſtinct from the *Oeſophageus*; for when this is Contracted in Deglutition, that is Dilated.

CC, The *Tonſillæ*.

DD, The *Muſculi Stylopharyngei* which draw the *Fauces* Upwards and Dilate them.

EE, The *Oeſophageus* or *Conſtrictor Gulæ*.

F, Part of the Superior Long Proceſs of the Scutiformal Cartilage, whence the laſt mention'd Muſcle partly Ariſes.

G, The *Muſculus Vaginalis Gulæ*, Cover'd with its External Membrane. The Fibres of this Perforated Muſcle of the *Gula*, have a Double Order of Fibres; the External Deſcend according to their Length, the Internal Parts Obliquely; the Former ſeem to Ariſe from the Arytenoidal Cartilages under the *Glottis*, and paſſing ſomewhat Obliquely to the Back-part of the *Gula*, Deſcend to the Stomach; the Latter Order of Fibres ſeem to be a Continuation of the *Conſtrictor Gulæ*, and Deſcend Obliquely to the Upper Orifice of the Stomach. The Office of this Muſcle is to Preſs the Aliment after Deglutition into the Stomach, to which, by its own Weight it is apt to Deſcend in Humane Bodies; but in Quadrupedes the Poſition of the *Gula* being Horizontal, this Muſcle is Compos'd of a Double Order of Spiral Fibres, mutually Intercuſſating each other; as it is Deſcrib'd by Dr. *Willis* and Others.

Fig. 39.

A Portion of the *Inteſtinum Duodenum* Diſtended with Wind.

A, Its External Membrane, continued from the *Peritonæum*, Rais'd.

B, The External Surface of the Gut with the laſt mention'd Membrane remaining on it.

C, The External Longitudinal Fibres of the Inteſtine.

D, The Orbicular or Circular Fibres plac'd immediately under the Former, which by Dr. *Cole* are thought to be Spiral, and a continued Thread from one Extream of the Gut to the other, by which means the Periſtaltick Motion of the Inteſtines are continued.

By what I could ever Obſerve in Examining theſe Fibres, whether after Boyling or not, I muſt confeſs I could never be ſatisfied whither they are Continued and of a Spiral Diſpoſition, nor indeed is it poſſible to Untwiſt a Single Fibre if they were ſo Diſpos'd, by reaſon of its Smallneſs and Collateral Adheſion to each other, by means of their Blood-Veſſels; but on the contrary they rather Appear on very ſtrict Examination, to be Semicircular, ſome longer and others ſhorter; by which means they more Adequately bring the Sides of the Inteſtine nearer each other, in Order to drive on its Contents. Beſides this Office of the Muſcular Fibres of the Inteſtines, by their Reciprocal Co-operation, they not only Compreſs their Subjacent Glands, and Drive out their contain'd *Mucus* to join with the Aliment; but by Collaterally preſſing each Side of the Guts, they Open the Mouths of the Lacteal-Veſſels to receive the *Chyle*.

Fig. 40.

Repreſents a Portion of the *Inteſtinum Jejunum* Diſtended with Wind; its External Membrane and Muſcular Fibres being taken off.

AA, Some of the Semicircular Fibres ſtill remaining on the Inteſtine.

CC, Divers Small Glands ſcater'd at Various Diſtances between the laſt mention'd Cluſters of Glands.

We are beholding to the Learned *Wepher* and the Accurate *Peyer*, for the Diſcovery of theſe Cluſters of Glands of the Small Guts, as well as thoſe Solitary Glands ſcatter'd up and down in the Large Guts: Tho' Dr. *Willis* and Others had mention'd a Glandulous Membrane of the Guts, yet it Furniſht us with no tollerable *Idea* of their Exiſtence and Office. They are ſupplied with Blood-Veſſels, Nerves and Lympheducts, in Common with the Inteſtines and Excretory Ducts of their own; but I can by no means think the Nerves Import any Part of the Matter, which theſe Glands Diſcharge by their Excretory Pores, into the Cavity of the Inteſtine.

Peyer takes Notice that theſe Glandulous Cluſters are plac'd in that Part of the Gut, Oppoſite to its Connection with the Meſentery, but you will frequently find them near the Meſentery; yet I never found them in that Part of the Gut, to which the Meſentery is Connected.

The Matter they ſeparate from the Blood, and Diſcharge by their Excretory Pores into the Cavity of the Gut, is very Tenacious, and ſince its Compreſt from them by the Periſtaltick Motion of the Guts, at the very inſtant the Alimentary Contents are paſſing by, it affords us no mean Argument, that it cannot ſo join with them, as to render any of the Chylous Particles more fit to paſs the Mouths of the Lacteal Veſſels; but that it only ſerves as a Vehicle to thoſe Contents of the Guts, and Defends the Inward Villous Membrane from being Offended, either by Sharp Humours, or any Acuminated Bodies which often paſs that Way.

The Glands of the *Cæcum*, *Colon* and *Rectum*, which are Analogous to theſe of the Small Guts, differ very much from them in Figure and Situation; the Former lying in Cluſters, whereas theſe from their Appearance, *Peyer* and Others call Solitary Glands; they being Small, Lentiformal, and very Numerous, plac'd from each other at Various Diſtances, not unlike the Stars in the Firmament.

All theſe Glands of the Inteſtines, as well as thoſe of the Stomach, Liver, and *Pancreas*, are Affected with Cathartick Medicines, and Help to Diſcharge the Matter Evacuated by Stool; by *Affected*, I don't mean that the Purging Medicine beſtows any Particles, immediately as it paſſes by them into the Cavity of the Gut; but that after its Particles are paſt into the Blood by the Chyle Ducts, it meets with a Fit Strainer in the Parts laſt mention'd, as well as theſe Glands by which it paſſes off again with the Serous Part of the Blood.

FINIS.

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—*Coraco-*

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